

Advocating for Behavioral Shift and Raise in Awareness Amidst a Warming Planet

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Abstract

Throughout the past years, there has been a noticeable increase in engagement in circular citizenship behaviors, prominent in various areas of research and online platforms.

Regardless, more action is still called for, IPCC's latest update indicates that we're not yet on track to limit global warming to safe temperatures. The circular economy is a crucial aid in fostering a sustainable and resilient economic system for environmental preservation and climate change mitigation. To motivate individuals towards engagement in actions that support the circular economy we need to know what are the drivers behind these behaviors.

This paper focuses on personal and dynamic norms as predictors for engagement in behaviours that aim to influence other citizens to support the circular economy. We hypothesized that both independent variables positively predict the outcome behavior and that personal norms act as moderator in the relationship between dynamic norms and the outcome behavior. The research is a cross-sectional independent measure study, conducted via a questionnaire. A non-probability sampling technique was utilized, as participants were self-recruited through social platforms, and the final sample size consisted of 72 participants. Personal norms emerged as a robust predictor, while dynamic norms played a nuanced role. The main effects of the predictors were found to be statistically significant, however, the moderator effect was nonsignificant. The findings contribute valuable insights into the multifaceted nature of normative influences on engagement in citizenship behaviors that aim to influence others and expand the limited representation of the circular economy in the scientific literature.

Keywords: circular economy, circular citizenship behaviors, personal norms, dynamic norms, regression analysis

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Seven years ago, the very first binding agreement on climate change took effect, the Paris Agreement, with a key objective to keep global warming temperatures well below 2°C and to actively pursue a limit of 1.5°C (UNFCCC Secretariat, 2016). Three years later, in 2018, the Intergovernmental Panel on Climate Change (IPCC) emphasized that the efforts required to follow the trajectory of the warming limit goal of 1.5°C are unmatched. And just last year, the press release of the IPCC (2023), stressed that we are not yet on track to achieve this goal and the challenge is even greater, as the increase in burned greenhouse gasses persists. The importance of sticking to the agreement's goal is crucial, as global warming carries devastating consequences for nature and humans all around the world and every slight increase in temperatures brings escalating hazards for our health and all ecosystems (IPCC, 2023). We've already observed part of these consequences, extreme weather conditions have led to food and water insecurity, heatwaves and floods resulting not only in dangerous living conditions but in fatalities (IPCC, 2023).

The IPCC (2023) further highlights that there is an urgency for accelerated action, expressing that "if we act now, we can still secure a liveable sustainable future for all" (p. 1). Indeed, an increase in action has been displayed since, countries, cities and organizations are progressively establishing targets towards carbon neutrality, zero-carbon solutions are increasingly competitive in economic sectors, especially in power and transportation, which are responsible for 25% of emissions (United Nations, 2023). Furthermore, there is a noticeably increased engagement in pro-environmental behaviors, which are focused on practices of adopting a plant-based diet, reducing electricity and water usage and overall altering one's behavior such that it benefits the ecosystem and availability of materials and energy (Steg & Vlek, 2009). An increased engagement can also be observed on social media platforms, where people raise awareness and promote consumer eco-friendly practices and

youth-led climate movements (e.g., Fridays for Future) have established recognition.

However, the exhibited increased engagement in pro-environmental actions, in pace and scale, are still insufficient in dealing with the consequences of climate change (IPCC, 2023).

In the current paper, we will focus on individuals as they hold substantial agency in determining the success of climate change interventions across all levels and magnitudes (Hampton and Whitmarsh, 2023). And thus, their decisions bear a significant impact on the global efforts aimed at tackling climate change, their role spreads further than consumerism, they are employees and employers, family and community members, voters and citizens (Nielsen et al., 2021). While most attention in research is put on pro-environmental behaviors, as discussed above, there is a need for a greater shift in our economy that will allow a fundamental systematic change. The circular economy (CE) refers to an economic model that is focused on reusing what is already available, keeping on items for as long as they are functional and reducing overall resource use, through behaviors like circular consumption and circular citizenship (Bocken et al., 2016). We will focus on circular citizenship behaviors as they have been argued to have a substantially higher potential to catalyse governmental action, leading to long-term solutions and mitigation for future environmental consequences (Doherty & Webler, 2016). They reflect actions that have the purpose of actively influencing actors, such as governments, organizations and other individuals to act in support of systematic change in favor of a circular economy (Pacheco et al., 2024). Clayton et al. (2015) investigated collective action regarding greenhouse gas emissions and found that participation in collective action, such as voting, petitioning and endorsing public policies stands out as one of the most influential methods that have affected individuals to engage in preventative behaviors on climate change. Furthermore, Hickman et al. (2021) reason that focusing on individual impacts (such as pro-environmental behaviors) can induce guilt of not doing enough to preserve our environment, which leads to feelings of

powerlessness towards the crisis of climate change, and thus even lower rates of engagement. In contrast, emphasis on influence and climate citizenship can cultivate productive and empowering relations towards preventative actions on climate change, leading to higher engagement (Hickman et al., 2021).

Widespread communication on climate change focuses on information supposed to increase environmental concern assuming that the concern itself will prompt behavior, yet, Doherty and Webler (2016) found that the most concerned individuals are not necessarily taking action. Research has shown that providing information alone doesn't always lead to direct behavior change, regardless of individuals' perceptions (Estrada et al., 2017). Kurz et al. (2014) argue that individuals' choices for engaging in different behaviors, are shaped by various factors, with habit as the strongest driver for routine behaviors rather than intentional choice. The translation of one's choices into enduring lifestyles and routines can be either facilitated or constrained by social influence (Kurz et al., 2014). Meaning that the interpreted behavior of those around us, friends, family and society have the highest impact on our behavioral choices, they provide standards for which behaviors are accepted and desired and we use those standards to understand and compare behaviors (Cialdini, 2003; Schultz et al., 2007). Hence, social norms have been extensively researched and established as strong predictors in promoting pro-environmental behaviors, in areas such as reusing hotel supplies, household energy consumption, recycling, etcetera (Allcott, 2011; Schultz et al., 2008; Schultz, 1999; Farrow et al., 2017).

Regardless of the extensive coverage in research, results on the effectiveness of social norm interventions are still inconsistent (Anderson et al., 2017; Scheibehenne et al., 2016). This could be due to the fact that many problems require high numbers of people to stop following the current standards and instead spread a new accepted behavior (Prentice & Miller, 1996; Sparkman & Walton, 2017). This includes for example practices such as

consuming single-use plastics, which are harmful to the environment, yet are normal in our daily lives and supported by societal norms. People see others participating in them, which is confirmative and thus doing the same becomes normal, creating an obstacle to societal change (Prentice & Miller, 1996; Sparkman & Walton, 2017). Thus, the necessity for dynamic societal norms arises, they give information on other's behavior development over time (Sparkman & Walton, 2017). They have the ability to drive behavior change by highlighting the significant change in the collective behavior, the social influence shifts from strengthening the norm to challenging and altering it (Mortensen et al., 2017; Sparkman & Walton, 2017). In their article, Sparkman and Walton (2017) summarized the results of five experiments that they conducted and concluded that dynamic norms have the power to motivate behavior change in individuals, even when there are fixed societal norms in place. However, dynamic norms have recently become a subject of investigation in the literature on environmental activity and the research most often focuses on consumer behavior (e.g., de Groot et al., 2021; Loschelder et al., 2019; Sparkman & Walton, 2017). Nevertheless, the results should be translatable to citizenship behaviors, as both consumer and citizenship behaviors are part of the circular economy practices and both aim at tackling global environmental challenges, hence we can presume they are influenced by similar determinants. As commented, the literature argues that influencing people through information about changes made by others could aid as a catalyst for broader behavioral change, but the topic needs further support (Mortensen et al., 2017; Sparkman & Walton, 2017). Therefore, in the present paper, we pose the following hypothesis:

H1: Dynamic norms positively relate to higher engagement in behaviors that aim to influence other citizens to participate in the circular economy.

While social norms are guidelines for behavior based on others' actions and attitudes, our behaviors are also influenced by an internal set of standards and beliefs that guide our

own behavior, specifically personal norms (Schwartz & Howard, 1981; Thøgersen, 2009). They induce a moral imperative to engage in specific behaviors (Schultz et al., 2014). Personal norms have been widely investigated and argued to relate to pro-environmental engagement as part of the Value Belief Norm theory (VBN; Stern et al., 1999). The VBN suggests that individuals' behavior is driven by personal norms and in turn they are based on beliefs, ecological perspective, understanding of environmental consequences, and a sense of accountability for the issue (Stern, 2000; Stern et al., 1999). Given that personal norms act as a personal moral compass the link between them and one's involvement in circular citizenship behaviors is relatively straightforward. If one has a high environmental personal involvement, they would consequently have a greater tendency to participate in pro-environmental activities (Joanes, 2019; Onwezen et al., 2013). Nevertheless, research on personal norms and circular citizenship behaviors is scarce, thus, we will investigate the relationship between personal norms and engagement in behaviors circular citizenship behaviours in others. We hypothesize:

H2: Personal norms positively relate to higher engagement in behaviors that aim to influence other citizens to participate in the circular economy.

Although personal norms and social norms might be viewed as somewhat connected concepts, personal norms represent our internal standards regarding a behavior instead of the socially imposed rules (Kallgren et al., 2000). A relationship between them, however, exists and has been widely investigated. A study by de Groot et al. (2021) researched the relationship between the two norms through the lens of the Elaboration Likelihood Model. The model assumes that individuals have higher susceptibility to readily available peripheral cues (such as social norms) when they lack strong pre-existing attitudes on a specific topic (i.e., people with weaker personal norms) (Petty & Cacioppo, 1986). Thus, the opposite should be true, with social validation having a weaker impact when personal norms are well

established (Schultz et al., 2014). Further research even suggests that when other citizens don't take part in the desired behavior, well-established personal norms should lead to higher engagement in that behavior (Hornsey et al., 2003; Hornsey et al., 2007). De Groot et al. (2021) found that dynamic norms have a stronger influence on individuals with weaker personal norms in regard to engagement in pro-environmental behaviors. In contrast, a message highlighting the positive social trend was less effective in strengthening intentions to act, particularly for individuals with strong personal norms toward that desired behavior (de Groot et al., 2021). The discussed study explored the relationship between the two determinants and pro-environmental behavior engagement by employing personal norms as a moderator. The rest majority of literature on social norms, personal norms and pro-environmental behaviors investigates the relationship through means of mediation (e.g., Schwartz, 1973; Doran & Larsen, 2016; Niu et al., 2023; Kim & Seock, 2019). More research is needed on the role of personal norms as a moderator in order to broaden the understanding of the precise way in which they influence the relationship between social norms and engagement in desired behaviors. Furthermore, as with every determinant that we've discussed so far, a significant gap exists in the coverage of engagement in circular citizenship behaviors, in regards to this relationship where personal norms act as a moderator this is also the case. Thus, we pose our third hypothesis:

H3: Personal norms moderate the relationship between dynamic norms and engagement in behaviors that aim to influence other citizens to participate in the circular economy, weak personal norms will pronounce the relationship between dynamic norms and engagement in behaviors that aim to influence other citizens to participate in the circular economy.

Therefore, in this paper, we aim to fill in that gap and shine a light on the topic of spreading awareness of the circular economy. But also, contributing to the already existing

literature and reinforcing the findings of previous research, so that real-life interventions can be put in place and progress can be exhibited on the issue of climate change. As already established, given the drastic changes that continue to occur in our environment, there is a highly relevant need to comprehend how we can drive citizens towards a behavior change in order to save our society, our ecosystems and our planet as a whole.

Methods

Participants

The present study comprised an initial sample of $n=140$ participants and a final sample of $n=72$. Participants were excluded if they didn't consent, failed to complete the study or failed to pass the 3 attention checks within the study. The data collection took place from December 6th, 2023, to January 3rd, 2024. As an inducement to complete the questionnaire, participants contributed to a reforestation donation and in addition, they could also sign up for a raffle to win one out of three Amazon vouchers, each worth €20. Different incentives were used for the study to appeal to groups with different values and viewpoints, in an attempt to acquire a sample high in variability. For the prize raffle, email addresses were collected, however, the email was stored independently from the data collected, which meant participants remained anonymous to the researchers.

The age of participants varied between 18 and 56 and the average was 24. The sample consisted of 39 females, representing 54% of the total sample, and 32 males, representing 44%. One person reported another gender or didn't want to indicate their gender. Most participants have completed university education level (WO), with 40% completed secondary school (VWO/HAVO). The net monthly income level of 42% of the participants was less than €1499, 17% fell between €1500 and €2499 and the rest are spread approximately equally across the other income levels, 14% preferred not to say.

Design & Procedure

This survey study was conducted by two students for a bachelor thesis project and was ethically approved by the Ethics Committee of Psychology of the University of Groningen. The research was conducted via a questionnaire, carried out via the online survey platform Qualtrics software (2015) with a duration of 20-30 minutes. All participants completed the questionnaire on their device, in their environment and pace. A non-probability sampling technique was utilized, as participants were recruited through online social platforms (e.g., WhatsApp).

The conducted study was a cross-sectional independent measure study. The introduction of the questionnaire included a thorough explanation regarding the purposes of the research, how their data will be treated, how the findings will be utilized and where they will be published and presented. Afterwards, participants were asked to sign an informed consent form and consent to the processing of their personal data, if they decided not to do so, they were forwarded to the end of the questionnaire and their data was not collected. If consent was given, questions regarding individuals' beliefs, influences and engagement in various circular behaviors followed. The questions covered participants' values, problem awareness and ascription of responsibility, self-efficacy, outcome efficacy, perceptions of personal and social norms regarding both consumption and citizenship behaviors respectively, circular consumption behaviors on housing and mobility and circular citizenship behaviors. This research was part of a bigger study, that included the variables listed above, however, this paper focuses only on the ones relevant to the current research question. Lastly, the demographics of participants were collected and there was an opportunity for feedback, comments and signing up for the raffle.

Materials

Engagement in behaviors that aim to influence other citizens to support the circular economy was measured through the following item: "How many times in the past 12 months

have you taken the following actions: Spread knowledge/awareness (e.g. through personal conversations, on the phone, or texting or through posting messages or links on social media) about the CE to your friends, family, or acquaintances, and motivate them to contribute to the CE". A 5-point frequency Likert scale was implemented, with the answer options: never, once, a few (2-3), several (4-5), or more (6+ or regularly). The scale for measuring circular citizenship behaviors was adapted and based on Doherty & Webler (2016) and measured to be high in reliability with a Cronbach's alfa of 0.84. The mean for the item that we used as a dependent variable was 2.69 with a standard deviation of 1.56.

Dynamic norms aimed at investigating participants' perceptions of others' behaviors in regard to their engagement in circular citizenship behaviors. The scale consisted of three items and an example item was "More and more of my close contacts (e.g. my friends and partner) engage in circular citizenship behaviours". The items were combined in a composite variable that was an average measure of the aggregate responses across the items. Dynamic norms ($M = 4.13$; $SD = 1.64$) yielded a Cronbach's alfa of 0.13 and had weak nonsignificant correlations between the items.

The scale that measured personal norms in regard to circular citizenship behaviors was based on Sharpe et al. (2022). The five items focused on the participant's sense of personal morals, responsibility and principles in regard to their engagement in circularity, e.g. "I feel morally obliged to engage in circular citizenship behaviours". Again, a composite variable was created that represented a mean of the aggregate responses across all items. The measure of personal norms ($M = 4.18$; $SD = 1.39$) was found to be highly reliable ($\alpha = .93$), and all items had moderate to strong significant correlations between each other. ($p < .001$).

A series of 7-point Likert scales were used for the items regarding personal and dynamic norms, where 1 represented "strongly disagree" and 7 represented "strongly agree", respectively.

Results

The data was processed and analyzed using the statistical software JASP Team (2024). The correlation between all variables was significant ($p < .05$), where dynamic norms had a weak correlation with the outcome behavior and personal norms ($r = 0.32$; $r = 0.34$) and a moderate relationship was found between personal norms and the outcome behavior ($r = 0.54$).

To test our first hypothesis, namely that dynamic norms positively relate to higher engagement in behaviors that aim to influence others to support the circular economy, a linear regression was conducted. The results indicated that dynamic norms statistically significantly explained 10% of the variance ($R^2 = .10$, $F(1,70) = 8.05$, $p < .01$). It was observed that for each point increase in the measure of dynamic norms, the predicted outcome behavior increases by approximately 0.32 points ($p = .006$). The confidence interval indicated that we can be 95% certain that the true slope of the relationship between the outcome behavior and dynamic norms lies between 0.09 and 0.52.

A simple linear regression was also performed to investigate whether personal norms positively relate to higher levels in the outcome behavior. A significant regression was found ($F(1,70) = 28.88$, $p < .001$). The R^2 was .29, indicating that personal norms explained approximately 29% of the variance in engagement in the outcome behavior. For each point increase in the measure of personal norms, the predicted outcome behavior increases by approximately 0.54 points ($p < .001$). The confidence interval indicated that we can be 95% certain that the slope of the relationship between the outcome behavior and personal norms lies between 0.38 and 0.83.

Finally, we hypothesized that weak personal norms strengthen the relationship between dynamic norms and engagement in behaviors that aim to influence other citizens to support the circular economy. Multiple regression analysis was conducted and results

indicated that the two predictors statistically significantly explained 32% of the variance ($R^2 = .32$, $F(3,68) = 10.61$, $p < .001$). Personal norms significantly predicted the outcome behavior ($\beta = .73$, $p = .01$) with a 95% CI [.17, 1.28], but dynamic norms ($\beta = .35$, $p = .24$) had a nonsignificant result with a 95% CI [-.24, .94], and so did the interaction effect ($\beta = -.04$, $p = .47$) with a 95% CI [-.16, .08]. The findings showed that personal norms do not seem to moderate the relationship between dynamic norms and the outcome behavior.

Exploratory analysis

We wanted to test whether personal norms can help explain the relationship between dynamic norms and engagement in behaviors that aim to influence other citizens to support the circular economy through mediation. Statistically significant results for the indirect effect were yielded through a bootstrap mediation analysis ($\beta = .16$, $z = 2.56$), with a significance of $p = .01$ around a 95% CI [.05; .29]. Given that zero isn't included in our confidence interval we can conclude that there is a statistically meaningful difference between the mean of the two groups, suggesting that personal norms mediate the relationship between dynamic norms and the outcome behavior.

Discussion

Radical change is vital for mitigating the environmental hazards that currently occur and are expected in the near future (IPCC, 2023). Individuals have the ability to engage, spread awareness and influence other citizens to participate in the circular economy and citizenship behaviors (Pacheco et al., 2024). These practices hold the power to bring systematic change in governments, organizations and the economy as a whole, in favor of the environment (Doherty & Webler, 2016). Great quantities of people must be involved in order to achieve the progress that is needed and move away from the unsustainable behaviors that are socially accepted nowadays (Sparkman & Walton, 2017). Therefore, the drivers behind these behaviors need to be understood in order to create interventions that can motivate a

widespread behavior shift. Social norms have been widely investigated on the topic of pro-environmental behaviors, but most research focuses on descriptive and injunctive norms (Doherty & Webler, 2016; Farrow et al., 2017). In the present paper, we recognized a need to demonstrate the ever-developing trend in engagement in the circular economy as a driver for one's engagement, specifically dynamic norms. In addition to dynamic norms, we explored individuals' moral standards as an internal motivation to participate in the circular economy and how these two factors interact with each other to either strengthen or decrease one's intention to participate in the desired behavior. The results provide valuable insights into the relationships among these variables and contribute to our understanding of the factors that drive engagement in behaviors that aim to influence other citizens to participate in the circular economy.

Our first hypothesis proposed a positive relationship between dynamic norms and engagement in behaviors aiming to influence other citizens to participate in the CE. The linear regression analysis supported this hypothesis, the positive regression coefficient suggests that as dynamic norms increase, the predicted outcome behavior also increases. However, dynamic norms explain a relatively small proportion of the variability of engagement in behaviors that aim to influence other citizens to engage in the CE, suggesting that their own dynamic norms can't predict the outcome behavior substantially.

Similarly, the second hypothesis, which proposed a positive relationship between personal norms and engagement, was supported by the results. Personal norms explained a substantial proportion of the variance in engagement, emphasizing their significant role in influencing engagement in the outcome behavior. The regression coefficients indicate that for each point increase in personal norms, the predicted outcome behavior increases, reinforcing the importance of personal values in shaping environmentally responsible actions.

The third hypothesis, examining the moderating role of personal norms in the relationship between dynamic norms and engagement yielded no significant results. The relationships between the two determinants and the dependent variable didn't change, dynamic norms' predictability didn't increase, meaning that personal norms didn't exhibit a significant moderating effect. This suggests that the effect of dynamic norms on the outcome behavior does not vary based on levels of personal norms, the inclusion of personal norms as a moderator does not contribute significantly to explaining the variance in the dependent variable beyond what is already explained by the main effects.

In our exploratory analysis, we delved into the mediating role of personal norms in explaining the relationship between dynamic norms and engagement in behaviors that aim to influence other citizens to participate in the circular economy. A large proportion of literature focuses on the influence that personal norms have as a mediator between social norms and desired pro-environmental behavior (e.g., Schwartz, 1973; Doran & Larsen, 2016; Kim & Seock, 2019). This is because it is argued that personal norms are a form of social norms, that in essence individuals incorporate societal expectations, values and beliefs into their own internal standards of behavior (Schwartz, 1973). Therefore, de Groot et al. (2021) reason that interventions that target social norms highlight the significance of the socially accepted behavior and thus they should consequently activate personal norms. Drawing from this statement, we can understand that when interventions focus on changing social norms, individuals may internalize these norms as personal standards of behavior. In other words, by drawing attention to social norms, interventions indirectly influence individuals' personal beliefs and behaviors, leading them to adopt or conform to those norms on a personal level.

Based on this research we deemed appropriate to explore whether such a relationship exists in our case, where we focused on dynamic social norms and engagement in behaviors that aim to influence other citizens to participate in the circular economy as the desired

outcome behavior. The results demonstrated a significant indirect effect, displaying that the effect of dynamic norms on the outcome behavior is transmitted through changes in personal norms. This could mean that individuals' perceptions of personal norms play a crucial role in translating dynamic norms into actual behavior.

Theoretical Implications

In our study, we focused on social norms and specifically dynamic norms, because in contrast to social norms in general, dynamic norms are represented only in emerging literature and specifically research that focuses on consumer behaviors (e.g., Loschelder et al., 2019; Sparkman & Walton, 2017). We managed to expand the literature on dynamic norms by exploring their possible influence on circular citizenship behaviors that aim to influence other citizens to participate in the circular economy. However, our analysis yielded no statistically significant results for dynamic norms as a direct predictor, nor as a moderator, meaning that we can't claim that they bear significance in relation to engagement in circular citizenship behaviors.

Regardless, we argue that our findings hold a great theoretical contribution to the research on the topics, both regarding the fields of social and environmental psychology. Our research allows for insights into how measures of dynamic norms can be developed and expanded for the means of investigating circular citizenship behaviors.

Furthermore, our investigation of personal norms as a driver for engagement in the outcome behavior demonstrated significant results, both as a main predictor and as a mediator for the relationship between dynamic norms and the outcome behavior. Once again, the coverage of circular citizenship behaviors is limited on the topic of personal norms as well, previous literature puts emphasis mainly on consumer behaviors (Joanes, 2019; Onwezen et al., 2013). Our study provides expands the literature and suggests that the influence of personal norms can be translated to circular citizenship behaviors. In addition, the exploratory

findings support the existing theoretical frameworks that personal norms are a mediator for the relationship between social norms and pro-environmental behaviors (Schwartz, 1973; Doran & Larsen, 2016; Niu et al., 2023). But they also expand the frameworks, demonstrating that their power as a mediator for this relationship expands to dynamic norms and also to circular citizenship behaviors that aim to influence other citizens to participate in the circular economy.

Practical Implications

The importance of social norms (and specifically dynamic norms) has been displayed in the literature and they have been argued as one of the most effective, cost and effort-efficient measures in pro-environmental behavior change (Loschelder et al., 2019; de Groot et al., 2021). The displayed influence of personal norms and dynamic norms on circular citizenship behaviors in this paper is a valuable insight for NGOs and other actors for the construction of efficient communication strategies and interventions for nudging individuals into the transformation of the economy into a circular one.

Walton and Wilson (2018) have coined the term “wise interventions”, which cause a self-sustaining, self-reinforcing transformation in individuals and environments through interventions focused on both. Situation-centric interventions, like dynamic norms, focus on altering the context or environment in which decisions are made, often through changes in the "choice architecture." In the case of dynamic norms, this might involve displaying normative information, such as a norm sign, to influence behavior. On the other hand, person-centric interventions focus on changing individuals' beliefs, attitudes, or values. Personal norms, which reflect individuals' internalized standards of behavior based on their values and beliefs, directly target individuals' perceptions and motivations. Therefore, we can assume that they align with the concept of person-centric interventions, as they aim to influence individual behavior by targeting personal beliefs and attitudes. This can lead to

successful long-term interventions that can drive individuals towards acting in line with the circular economy.

Limitations and Directions for Future Research

For future research to be able to fulfil the potential possibilities that our research suggests, we need to point out the limitations that the study has. Because of our questionnaire's long completion time, we experienced a high number of participants drop their participation, which led to a small sample size that challenged the generalizability of our findings. This is further defied by the fact that a substantial proportion of our sample consisted of individuals below 25 years (65%) and those with low income. Despite our efforts to distribute the questionnaire across various populations, it is reasonable to infer that it predominantly reached students, as both researchers who spread the questionnaire were also students, posing a challenge to generalizing our findings to the population. Hence, further studies with more representative samples need to be conducted in order to test whether the same pattern will be observed in other populations, e.g., which would include older and working individuals. In addition, the cross-sectional nature of our study limits our ability to establish causality, to correct for this, an experimental design study can be conducted. For example, in one of their experiments, Sparkman and Walton (2017) investigated whether dynamic norms can change interest in food selection. They exposed participants in a queue at a café to dynamic norms through a survey, asking about their preferences as a consumer. Afterwards, the customers had to order and thus make an immediate choice after being exposed to the norm. A similar method can help investigate how dynamic norms influence one's choices to begin or participate in conversations concerning the circular economy or its practices.

Moreover, we observed a very low internal consistency of the measuring scale for dynamic norms which poses a challenge to our results and their interpretation. A probable

explanation for this issue could've been the different reference groups in our participant's pool, namely Dutch people and internationals, which might have different values, backgrounds and thus perceptions and interpretations of norms. Additionally, varying levels of awareness and differences in social circles (i.e., diverse social circles with varying levels of engagement in the circular economy) could've contributed to the inconsistency in the participants' responses. This could've caused the low predictability of dynamic norms on the outcome behavior, consequently raising the need for caution in interpreting the findings related to this construct. Regardless, the significant relationship that was found leads us to conclude that dynamic norms have an importance in understanding the outcome behavior and if the measure's reliability is improved or if additional variables are added to the model, we could observe a good model fit. Additionally, it is plausible that on the topic of circular citizenship behaviors dynamic norms need to be tackled with a different approach and thus tap into the mechanisms of the norms that drive those specific behaviors. Nevertheless, the low reliability of our scale suggests potential issues with the items and future research needs to refine the measure for this construct, revisiting item formulation, exploring additional indicators, et cetera.

Additionally, as the findings of this research were based purely on survey data and thus no real-world information was acquired further research is needed to examine whether the results translate into real-life contexts. As in real life, there is a high complex interplay of various contexts under which interventions occur and thus determine their effectiveness. This is especially relevant as dynamic norms may become irrelevant when individuals naturally exhibit the desired behavior (Loschelder et al., 2019). However, they can be especially influential when the changing norm is highly noticeable or aligns with a situational context that encourages, rather than hinders, ongoing change (Loschelder et al., 2019).

Furthermore, the current study didn't investigate the specific roles that individuals play in society and thus their precise way of influencing others on the topic of circular economy. Although research is limited on the capacity of individuals to influence others it is crucial to be investigated as we communicate with each other daily via different means. Current literature suggests that according to the social roles that we have our capacity varies and that, for example, characteristics such as personality traits are important in personal relationships and that some of them have also been found to predict engagement in pro-environmental behaviors (Brick & Lewis, 2014; Soutter et al., 2020).

Conclusion

The present study aimed to build upon and expand the existing literature on the complexity of the drivers behind circular citizenship behaviors, specifically those which aim to influence other citizens to participate in the circular economy. The findings contribute valuable insights into the multifaceted nature of normative influences on engagement in citizenship behaviors that aim to influence others. While personal norms emerged as a robust predictor, dynamic norms played a nuanced role. Although our confidence in the results on dynamic norms is limited, based on previous research, we are certain that there is more to unfold in their ability to drive behavior. Nevertheless, the nuanced perspective that is demonstrated in our study underscores the complex interplay between personal and dynamic norms in shaping and motivating engagement in the desired behavior. The circular economy is not merely an individual pursuit but a collective endeavour requiring societal support and collaboration. Exploring the normative influences on engagement provides valuable insights for designing effective interventions and communication strategies that can catalyze a positive societal and economic shift towards an aspired system that will protect our environment. The current research contributes to the existing literature and suggests the need for investigation on targeted interventions that consider both internal and external influences. Future research

could further explore the intricacies of normative influences and develop targeted interventions for promoting sustainable behaviors. Most importantly, this research has managed to expand the limited representation of circular citizenship behaviors and the circular economy in the scientific literature. We hope to inspire researchers to delve into the mechanisms that drive these crucial behaviors needed to transition into a sustainable economic model and make the challenge of climate change achievable.

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