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The Effect of Top-down Involvement on People's Willingness
to Join a Bottom-up Initiative

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Abstract

Pro-environmental energy measures can be initiated by both municipalities and governments (top-down) or local community projects (bottom-up). Research on collaboration of these two so far has mostly dealt with developing strategies to make joint measures more effective. This paper analyses collaboration of municipalities and locals from a bottom-up perspective and aims to explore the effect of top-down involvement in bottom-up energy initiatives on citizens' willingness to join. I propose that there is a "cold" pathway towards willingness to join with collective efficacy as an underlying factor, and a "warm" pathway via identity leadership. Municipality involvement would increase collective efficacy, but could hamper identity leadership. A study was set up with participants ($N = 351$) being asked to imagine a community-based energy project in their neighbourhood. They were randomly allocated to three conditions describing different levels of municipality involvement in said community energy project (support, uninvolved, opposition). The results of the study indicate that municipality support creates the highest willingness to join in people. However, there was no support for the two proposed pathways. Still, both collective efficacy and identity leadership showed significant effects on willingness to join. This paper implies that both municipalities and local movements should aim to collaborate on pro-environmental measures, but more research is necessary for further conclusions and insights.

The Effect of Top-down Involvement on People's Willingness to Join a Bottom-up Initiative

Within the quest of creating a sustainable future, a key dimension is the question how humans can cover their energy demands through continuous technological advancements and diminishing reserves of fossil fuels. Renewable energy sources are not able to fully replace fossil fuels in most places yet (Holechek et al., 2022). In a time of rapidly rising prices for gas and oil, this dependency on fossil fuels creates severe issues for the public. On average, gas prices went up by 22% in the EU28 (EU+UK) between 2021 and 2022, with the number of households in struggling to pay their utility bills increasing by 50% (Holzhausen et al., 2022). Moreover, the public is further threatened by the detrimental long-term effects of climate change. For one, these include environmental consequences such as diminishing biodiversity, increased flood risk, dangerously high temperatures and droughts, wildfires, rising sea levels and others (European Commission, n.d. -a). On top of that, climate change has societal consequences, further contributing to the global wealth inequality (Chancel et al., 2022). This is because low-income, socially marginalised people are especially exposed to the risk factors. Solving this problem requires both climate-friendly investments for the future and immediate action like financial aids and energy-saving behaviour. Often, it comes down to governments and municipalities to facilitate these processes which is referred to as a “top-down” measure (Easterly, 2008). An example of this is the Noor-Ouarzazate complex, an enormous investment in solar energy by the Moroccan government during the 2010s (Alami, 2021). However, energy initiatives can also involve “bottom-up” measures. Bottom-up energy initiatives are defined by being decentralised and controlled by non-professional citizens, from formulating aims, to gathering resources, to the actual implementation (Healey, 2015). This yields the advantage that citizens are more involved in pro-environmental efforts and local needs can be more adequately met (Thaler & Seebauer, 2019).

This paper aims to add relevant information to the discussion on bottom-up energy projects, specifically by exploring the role policy makers can take in relation to these initiatives. Should governments and municipalities be involved in such projects, or would that hamper the development of bottom-up initiatives? Furthermore, I aim to explore under which conditions a bottom-up initiative's chances of achieving their goals increase, by analysing the underlying factors that influence people's willingness to join these energy projects.

Bottom-up Initiatives

Why are bottom-up initiatives interesting to explore when looking at sustainability-related behaviour? For one, people who participate in bottom-up groups are more likely to adopt the group's values and norms, as the possibility of actively contributing to and collectively shaping a group's path can strengthen group identification (Jans, 2021). This works better with bottom-up approaches as people are more likely to identify themselves with other members of their community. In the scope of this study this is particularly relevant, as stronger identification with the community should increase people's willingness to join a local energy project.

To help understand why this is the case, one can look at the social identity approach (Tajfel, 1978a; Tajfel 1978b; Tajfel & Turner, 1986). The term social identity describes how people view themselves and others in social situations (Ellemers & Haslam, 2012). It specifically deals with intergroup relationships and is distinct from interpersonal exchanges. In social situations, people tend to think of themselves and others as group members of a certain group. Using social categorisation, people cluster other individuals into overarching groups, using one or multiple shared, distinguished characteristics that define them as members of the same group (Tajfel, 1978a). People differentiate between in- and outgroups. As people want to maintain a positive self-image, they tend to view groups that they see themselves as being part of more positively when comparing it to groups they do not relate to

(Tajfel & Turner, 1986). Moreover, they tend to adopt a group's norms and goals when they view it as an ingroup that they belong to. The self-categorisation theory states that people form a sense of themselves within social situations by internalising a set of social identities (Turner, 1985). For example, an individual may categorise themselves as German and as vegan, with these being distinct social identities.

Social identities are relevant factors in the domain of pro-environmental behaviour. The social identity model of pro-environmental action (SIMPEA) by Fritsche et al. (2018) describes how people's social identities facilitate collective pro-climate actions and motivations. The climate crisis is by default a problem that individuals cannot solve by themselves. Therefore, the model examines four processes that influence a group's capabilities to tackle environmental problems collectively, namely ingroup identification, collective efficacy beliefs, ingroup norms and goals as well as both individual and collective emotions and motivations. If these factors are salient, it enables social identities to promote sustainable actions.

How does a bottom-up approach affect these social identity processes? Pro-environmental social identities can be valuable for community-based sustainability measures. The idea is that bottom-up approaches work better because they foster identification with the community, making people more likely to internalise a group's pro-climate norms and values (Jans, 2021). Moreover, there is evidence that social identities are formed differently in bottom-up initiatives, as people are more likely to use an inductive pathway to form their social identity. Here, shared identities of a group are not "given" but derived from personal contributions of other members, which might create stronger long-term internalisation (Jans, 2021).

Collaboration of Bottom-up and Top-down

Pro-environmental energy projects do not need to be run using top-down or bottom-up measures exclusively. Research shows that collaboration between policy makers and citizens of local communities can offer great opportunities for facilitating pro-climate projects. For one, local citizens can participate in important decision-making which makes them feel more involved (Walentek & Jelonek, 2022). Moreover, policy makers can benefit from regional expertise of some citizens, leading to new ideas and approaches. Researchers agree that multilevel governance (shared power) is especially beneficial in tackling complex problems like climate-related issues. It requires structural changes from policy makers as well as behavioural changes by citizens, making public engagement crucial (Homsy et al., 2019).

However, collaboration between citizens and municipalities can also pose difficulties. One of the main issues that can arise during collaboration is when expectations of top-down and bottom-up representatives differ strongly, for example regarding the responsibilities of the two parties and the specific impact of the implemented measures (Proka et al., 2020). This can lead to conflict about decision-making power. When priorities of the involved parties differ, it could lead to frustration and arguments about which goals to pursue (first), hampering the potential benefits of collaboration. This highlights that the decision to collaborate alone is not sufficient to tackle energy-related issues, the execution is key as well to satisfy all involved parties.

So far, these consequences of collaboration on the content and quality of work achieved by the parties were the main focus of researchers. While this is important to gain knowledge about how to optimise working together, I do not think that focusing on concrete results alone is enough to fully assess the consequences of bottom-up initiatives receiving support from policy makers. Something I am missing in the discussion about bottom-up and

top-down collaboration is how partnering up with policy makers affects the public's interest in potentially joining a bottom-up initiative.

Willingness to Join

A person's overall perception of a bottom-up initiative influences how they act towards it in multiple ways. I argue that one of the most important factors to consider for bottom-up initiatives is people's willingness to join the group. Active participation in a community energy initiative does not depend on an individual's personal motivation alone. Goedkoop et al. (2022) argue that the general perceived motivation inside the community and a person's involvement in the community are crucial as well. This is supported by Sloot et al. (2019), who stated that communal factors could be underrated when assessing people's involvement in an initiative. Willingness to join captures the individual motivations of citizens as well as the effects of community elements, as community motivation and involvement in the community influence each citizen's willingness to join. This makes willingness to join a suitable predictor of a person's sustainable energy motivation.

One could also argue that more people being willing to join a bottom-up initiative would lead to more members, as it increases the likeliness of people following through with their intention. This would give the group a stronger voice in expressing their goals and needs. Additionally, seeing other community members participating in a bottom-up initiative could be motivating other people to join, too (Rees & Bamberg, 2014). Based on the reasoning above I believe that willingness to join is a crucial factor for the long-term success chances of a bottom-up initiative. This is especially true for bottom-up projects that require a large portion of a community to join for it to work, for example when aiming to install a district heat system.

Relevant Factors for Willingness to Join

In this study, I want to address the question how different levels of top-down involvement in a bottom-up initiative affect people's willingness to join these. To get a better understanding about the relationship between different levels of top-down involvement and willingness to join, it is important to explore possible underlying factors. To do this I propose two possible mediators for explaining the connection, collective efficacy and identity leadership.

Collective Efficacy

The first proposed mediator is collective efficacy. Collective efficacy is a continuation of the self-efficacy construct, which stems from Bandura's social cognitive theory (Pietrantoni, 2014). The term describes a group's shared beliefs about being able achieve a common goal successfully. In the context of bottom-up initiatives, it is an interesting factor to analyse as it contains group members' thoughts about their own self-efficacy regarding pro-environmental behaviour, as well as their opinion about other group members' efficacy. For example, an individual could be thinking they are capable of saving energy from heating because they do not get cold easily, making their self-efficacy high. At the same time, they might believe that other initiative-members would struggle more with heating less for various reasons. If the group's shared goal was to turn heaters down to save energy, that person's collective efficacy of achieving this shared goal might be low, despite their self-efficacy being high.

The way people form their collective efficacy functions similarly to self-efficacy formation. For one, group members use their direct experience about previous successes and failures of the initiative (Pietrantoni, 2014). People may also shape their collective efficacy with social comparison or vicarious experience, more specifically by analysing what others might think about the group. Other factors can play a role too (e.g. persuasion), but what is

important to note is that language pathways, such as receiving verbal or written information, have shown the weakest influence on collective efficacy (Pietrantonio, 2014). This highlights that the factor reflects internal beliefs about a group that cannot easily be influenced by others.

Collective efficacy can affect several dynamics within a pro-climate bottom-up initiative. Firstly, research shows that efficacy is an important determinant of collective action (van Zomeren et al., 2008). This means that group members not possessing sufficient collective efficacy could lead to their motivation for participating in a community energy initiative being low. SIMPEA highlights collective efficacy as a crucial determinant for community-based pro-environmental actions (Fritsche et al., 2018). The higher a person's perceived collective efficacy, the more likely are they to adapt a group's norms and goals. Collective efficacy is a less stable characteristic than general self-efficacy (Pietrantonio, 2014). People assess it more situationally, given the specific challenge the group is facing. This is fitting in the case of sustainability-related efforts as they often target specific goals that might change over time. Collective efficacy also influences group decisions directly, for example how to spend available resources. It influences how goals or specific strategies are developed in the first place and how the group handles adversity. Most importantly, research shows that collective efficacy is strongly linked to group goal attainment (Pietrantonio, 2014). This is especially true for tasks that require high group interdependence, like joint energy-saving measures where members depend on other members following the collective goal.

One of the aims of this study is to explore conditions that allow bottom-up initiatives to achieve their targets, so how does collective efficacy relate to this? I argue that governments and municipalities influence the collective efficacy of members of energy initiatives. Policy makers have the power to enforce potential changes that bottom-up initiatives demand (Creamer et al., 2018; Meister et al., 2020). Moreover, they often can offer

necessary funding that might be lacking otherwise. Therefore, one can argue that policy makers being involved and supporting community energy initiatives would have a positive effect, leading to the first hypothesis of the study: “Top-down involvement in bottom-up initiatives creates a higher collective efficacy in people than no involvement, which makes people more willing to join the initiative.”

However, active aversion by policy makers should diminish the possibility of enforcing policy changes or receiving funding, lowering group members’ confidence in achieving their goals. Following this the second hypothesis states: “Top-down opposition of a bottom-up initiative leads to lower collective efficacy than top-down involvement or no involvement, resulting in a lower willingness to join the bottom-up initiative.”

Identity Leadership

The second suggested mediator is identity leadership. The term originates from research on leadership and illustrates a group’s opinion about how representative their leader is for them (Steffens et al., 2014). Similarly to collective efficacy, identity leadership was found to be linked to collective action (such as engaging in a community initiative) through identification and efficacy (Khumalo et al., 2022). If a leader is representative, it creates a stronger sense of unity among group members, making them more likely to follow the leader.

Identity leadership consists of four dimensions. The first dimension is called identity prototypicality and can be understood as a group’s thoughts about a leader being “one of us” (Steffens et al., 2014). In the scope of this study, identity prototypicality is viewed as the fit between the contents of a bottom-up initiative and an individual’s ideal image of their community. The second dimension of identity leadership is identity advancement, describing group members’ opinion about whether the leader is “doing it for us”. The third element of identity leadership is called identity entrepreneurship. It is a group’s thoughts about how well a leader is “creating a sense of us”. Completing the construct of identity leadership is identity

impresarioship, depicting a group's opinion about whether a leader "makes us matter". A leader can increase identity impresarioship by creating tangible outcomes, either with an internal or external orientation. Internally orientated actions enable people to actively enjoy their membership and act according to their beliefs. Externally oriented moves target outgroups and aim at impacting their behaviour.

The level of top-down involvement in a bottom-up energy initiative might influence identity leadership. Since identity leadership is a measure of representativeness, an initiative that is purely bottom-up should fare better than one that works together with policy makers, as most lay people would relate more to other community members. When looking at the dimension of identity advancement for example, I think that people might have less trust in top-down actors to operate in the interest of the initiative alone, without ulterior motives (Liu et al., 2020). Especially in a community setting, people might think that an initiative whose members also originate from the community knows the needs of lay people better than policy makers. Therefore, the third hypothesis of this paper states: "Top-down involvement in bottom-up initiatives leads to a lower perceived identity leadership of the initiative than no involvement, which in turn makes people less willing to join the initiative."

Something that could be interesting to explore is the effect of policy makers opposing a bottom-up initiative on identity leadership. One might think that active top-down aversion might create a bad image for a bottom-up initiative, which could lead to people distancing themselves from the group. In that case, the initiative's identity leadership would be low. However, top-down aversion could also have the opposite effect if people are not satisfied with policy makers. Here, a bottom-up initiative might even be more representative after facing top-down antagonism. Because the effect of top-down opposition is difficult to gauge, the study aims to explore the effect of active top-down opposition on identity leadership.

What is noticeable from the hypotheses is that the mediators collective efficacy and identity leadership seem to point in different directions, creating contradicting hypotheses. To explain this, I propose that there might not be a direct relationship between the level of top-down involvement and willingness to join, but two different pathways through collective efficacy and identity leadership. For one, people can use a “cold”, instrumental pathway via collective efficacy, where more top-down involvement is positive for willingness to join. However, using identity leadership, people could use a “warm” identity pathway which would lead to more top-down support creating a negative effect for willingness to join. I use the terms “cold” and “warm” to highlight the potential existence of two separate, unique pathways towards willingness to join. “Cold” should signal people using a more calculated and cognitive approach via collective efficacy, while “warm” indicates a more intuitive, affective approach. Ultimately, the goal is to find out which level of top-down involvement creates a higher willingness to join among people, and how these two pathways affect this process.

Present Research

To examine how top-down involvement in bottom-up initiatives affects people’s willingness to join via these two pathways, an experiment was conducted. The study was pre-registered, as well as reviewed and approved by the Ethical Committee of Psychology of the University of Groningen. In the experiment, the concrete levels of top-down involvement are top-down support, top-down uninvolved and top-down opposition. Support consists of municipalities approving and helping a bottom-up initiative, while uninvolved would be bottom-up groups acting independently. Opposition means that policy makers do not approve of the bottom-up initiatives targets. It is included to analyse the effect of active top-down aversion compared to policy makers being inactive and not supporting. The concrete hypotheses were:

H1: *“Top-down involvement in bottom-up initiatives creates a higher collective efficacy in people than no involvement, which makes people more willing to join the initiative.”*

H2: *“Top-down opposition of a bottom-up initiative leads to lower collective efficacy than top-down involvement or no involvement, resulting in a lower willingness to join the bottom-up initiative.”*

H3: *“Top-down involvement in bottom-up initiatives leads to a lower perceived identity leadership of the initiative than no involvement, which in turn makes people less willing to join the initiative.”*

Explorative: The effect of top-down opposition on willingness to join through identity leadership.

Methods

Participants and Design

Participants for this study were gathered with the help of Vattenfall. The participants are clients of Vattenfall living in the Netherlands and agreed beforehand to be contacted for research purposes. Data from 1376 participants was collected in total via Qualtrics (<https://www.qualtrics.com>). Participants who did not agree to the informed consent were excluded. Participants were randomly allocated to one of two studies, with 512 people entering the current study. 116 people did not finish significant portions of the survey or fill in the manipulation check referring to their condition (described below) and were excluded to make sure any possible differences found are caused by the manipulation. Lastly, two people who spent less than two minutes answering the questionnaire were excluded, as it could mean those people did not read the scenarios and questions properly.

The final sample size was 351, of which 265 were men (75.5%), 75 females (21.4%), one identified as “other”, and ten preferred not to say. Participants were on average 60.88 years old ($SD = 11.65$, $min = 24$, $max = 85$), with 14 not stating their age. 118 people were assigned to the support condition, 112 to the uninvolved condition, and 121 participants were part of the opposition group. The final sample size exceeded the 159 participants necessary to detect a medium effect with a one-way ANOVA ($f = 0.25$, $\alpha = 0.05$, $power = 0.80$; G*Power, Faul et al., 2007).

Procedure and Independent Variable

First, participants read a scenario that informed them about an energy initiative called “SMART” that was founded by members of the participants’ neighbourhood. Joining this initiative would be voluntary, and membership would mean to engage in some energy saving measures that the group collectively agreed on. A specific example was the use of smart-grids within the neighbourhood that would be able to give feedback on energy-saving based on the

participants' usage. The next part of the scenario contained the manipulation. Participants were randomly and unknowingly assigned to one of three conditions (support, uninvolved, opposition), depicting the independent variable level of top-down involvement. Participants in the support condition learned that their local municipality approves of SMART's plans and aim to actively support the movement. In the "uninvolved" condition, participants were informed that their local municipality was not part of the initiative, and it was run by other community members alone. People in the "opposition" group learned that the local municipality did not approve of SMART, as the planned measures interfere with the plans of the municipality. After reading through the scenario, participants filled in a manipulation check and some questionnaires assessing the dependent variable willingness to join SMART, the two proposed mediators (collective efficacy and identity leadership), as well as other measures for exploratory reasons.¹ Appendix A shows the manipulation texts for each condition.

Measures

All measures could be answered on a 7-point Likert scale ranging from 1 (completely disagree) through 4 (neutral) to 7 (completely agree). Every scale was translated into Dutch. For an overview of the questionnaire's measures see Appendix B.

Willingness to Join

Willingness to join the bottom-up initiative was measured with a 3-item scale, based on a study from Sloot et al. (2019) that measured interest to join a community energy initiative. An example of an item in this research is "I want to be involved in the SMART initiative." In this study, the willingness to join scale had a good internal consistency ($\alpha = .89$).

¹ Further measures: Integrity-based trust in "SMART" initiative; Personal values; Energy citizenship

Collective Efficacy

The first suggested mediator collective efficacy was captured using three items. The items were based on goal-directed efficacy beliefs, which were put in a collective context (Juggert et al., 2016). An example is the item “I think that the SMART initiative can promote an energy transition that is just and sustainable.” The collective efficacy scale had an excellent reliability ($\alpha = .95$).

Identity Leadership

The second proposed mediator identity leadership was assessed using a short form of the identity leadership inventory (ILI-SF; van Dick et al., 2018), consisting of four items. One example is the item “the SMART initiative represents the interests of residents in my neighbourhood.” The final 4-item scale showcased good internal consistency ($\alpha = .87$).

Manipulation Check

The manipulation check consisted of three items, which every participant in the final sample answered. Each of the three items refers to one level of the independent variable level of top-down involvement (support/uninvolved/opposition) and shortly represents the contents of the manipulation texts. The first item stated, “the municipality is involved in and supports the SMART initiative.” The second said “the SMART initiative was set up by residents in your neighbourhood only”, while the third statement was “the municipality opposed the SMART initiative.” Participants were asked to rate how well each statement aligned with the scenario they read in their condition. Participants failed the manipulation check when they scored the item relating to their own condition with 3 or lower. This would mean that a participant generally disagrees with the item, even though it is meant to summarise the scenario they read earlier, indicating the intended manipulation did not work.

Results

The proposed hypotheses were tested using mediation analyses. For this, it was checked whether the data meets the assumptions for linear regression, namely linearity, normality, homoscedasticity, independent residuals, and no multicollinearity (Poole & O'Farrell, 1971). The data met all these assumptions. For a complete overview of the assumption testing see Appendix C. The following section describes the results of the manipulation check in each group and the subsequent final participant exclusions.

Manipulation Check

A one-way ANOVA was conducted the check whether the manipulation in the scenarios worked. As each question referred to a specific condition, there should be significant differences between the three groups. This was indeed the case for all three items of the manipulation check. For support: $F(2, 391) = 37.81, p \leq .001$; For uninvolved: $F(2, 391) = 23.41, p \leq .001$; For opposition: $F(2, 390) = 68.65, p \leq .001$.

In the support condition, 132 people filled in the manipulation check. Out of these participants, 14 (10.6%) rated the alignment of the question relating to their condition and the scenario they read with a 3 or lower. In the uninvolved group, 128 people answered the manipulation check, of which 16 participants (12.5%) indicated a 3 or lower on the question targeting their condition. Regarding the opposition group, 13 of the 134 participants who filled in the manipulation check scored their respective question with a 3 or lower. In total, 43 people failed the manipulation check, as they signified that they disagree with a statement that summarises the scenario they read before.

Effect of Top-Down Involvement on Study Variables

To test the study's hypotheses, I first analysed the effect of top-down involvement on the study variables willingness to join, collective efficacy and identity leadership using MANOVA. Participants in the support condition scored higher on willingness to join than

people in the uninvolved group and the opposition condition. There were no significant differences found for collective efficacy and identity leadership. Table 1 shows an overview of the study variables per group.

Mediation Analysis

The next step for testing the hypotheses were mediation analyses using model 4 of Hayes' PROCESS macro (Hayes, 2012), as the independent variable level of top-down involvement is nominal. The dependent variable was willingness to join, with collective efficacy and identity leadership set as mediators. Indicator coding was used for the contrasts.

Collective efficacy has a significant effect on willingness to join, $b = .74$, 95% CI (0.66; 0.82), $t(347) = 18.81$, $p \leq .001$, $f^2 = .22$ (Figure 1). Identity leadership significantly influences willingness to join as well, $b = .82$, 95% CI (0.72; 0.91), $t(347) = 17.22$, $p \leq .001$, $f^2 = .12$. The direct effect of top-down involvement on willingness to join remained significant when including the mediators. X_1 describes the difference between the support condition and the uninvolved group, while x_2 relates to the difference between the support group compared to the opposition condition. For collective efficacy, both direct paths were significant, x_1 : $b = -.27$, 95% CI (-0.52; -0.01), $t(347) = -2.07$, $p = .04$, $f^2 = .22$; x_2 : $b = -.31$, 95% CI (-0.56; -0.06), $t(347) = -2.47$, $p = .01$, $f^2 = .22$, meaning that with the inclusion of collective efficacy as a mediator, the differences in people's willingness to join between the support condition and the other conditions remain significant. With identity leadership as the mediator, the direct effects remain significant, too, x_1 : $b = -.35$, 95% CI (-0.62; -0.09), $t(347) = -2.60$, $p = .01$, $f^2 = .12$; x_2 : $b = -.28$, 95% CI (-0.54; -0.02), $t(347) = -2.13$, $p = .03$, $f^2 = .12$. However, the indirect effects indicate that there is no mediation effect by either collective efficacy or identity leadership for the relationship of top-down involvement and willingness to join. For collective efficacy, x_1 : $b = -.13$, 95% CI (-.37; .12); x_2 : $b = -.07$, 95% CI (-.31; .19). For identity leadership, x_1 : $b = -.04$, 95% CI (-.28; .20); x_2 : $b = -.10$, 95% CI (-.34; .14).

Hypotheses

Based on the MANOVA and mediation analyses above, we can answer the study's hypotheses.

H1 The Effect of Top-Down Involvement on Willingness to Join Through Collective Efficacy

The MANOVA showed that top-down support has a significant positive effect on willingness to join. When adding collective efficacy as a mediator, the direct effect remains significant with a larger effect size, making collective efficacy a suppressor. Further analyses signalled that collective efficacy does not mediate this relationship. Based on this the first hypothesis, "top-down involvement in bottom-up initiatives creates a higher collective efficacy in people than no involvement, which makes people more willing to join the initiative", was rejected.

H2 The Effect of Top-Down Opposition on Willingness to Join Through Collective Efficacy

There were no significant differences or effects found in the opposition condition, neither in the MANOVA nor during the mediation analysis. Thus, H2, "top-down opposition of a bottom-up initiative leads to lower collective efficacy than top-down involvement or no involvement, resulting in a lower willingness to join the bottom-up initiative", was rejected.

H3 The Effect of Top-Down Involvement on Willingness to Join Through Identity Leadership

The above-mentioned positive influence of top-down support stayed significant when adding identity leadership as a mediator. There was no mediation effect found by identity leadership on the relationship, leading to H3, "top-down involvement in bottom-up initiatives leads to a lower perceived identity leadership of the initiative than no involvement, which in turn makes people less willing to join the initiative", being dismissed.

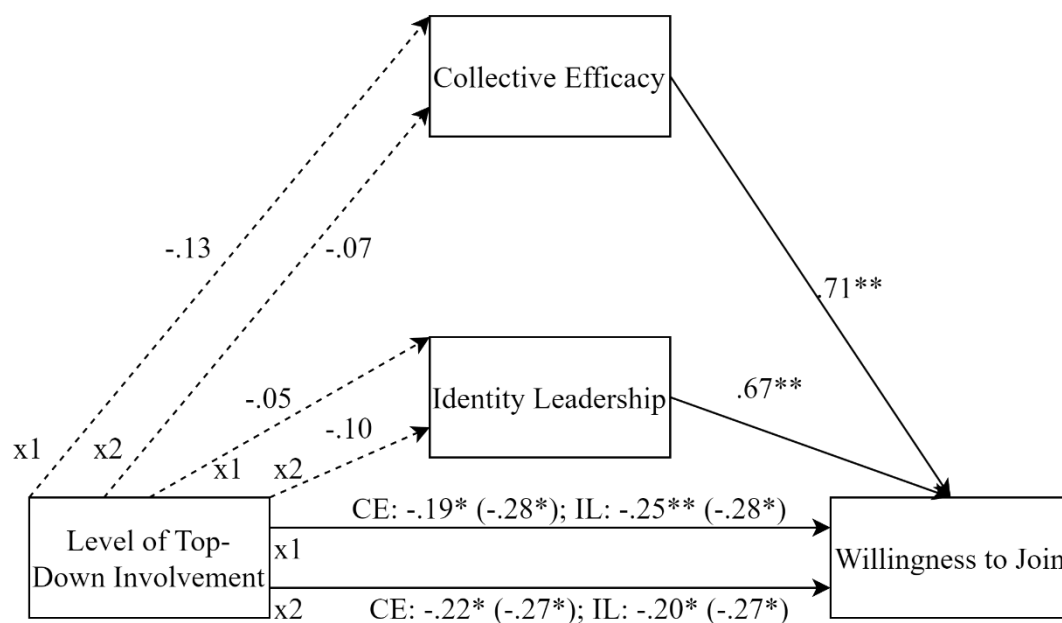
Explorative: The Effect of Top-Down Opposition on Willingness to Join Through Identity Leadership

The study aimed to explore the consequences of top-down opposition on identity leadership and willingness to join. While the results suggested that top-down opposition is more likely to lower identity leadership, there were no significant effects found in the opposition condition. While people were significantly less willing to join in the opposition group than in the support condition, there were no significant difference to the uninvolved group. All in all, clear conclusions cannot be drawn from the present data.

Table 1 – Overview of study variables for each group

	Support	Uninvolved	Opposition	$F(2,$	p	η^2
				348)		
Willingness to	5.26 ($SD =$	4.87 ($SD =$	4.88 ($SD =$	3.01	.05	.02
Join	1.38)	1.32)	1.47)			
Collective	4.99 ($SD =$	4.82 ($SD =$	4.90 ($SD =$.47	.63	$\leq .001$
Efficacy	1.26)	1.34)	1.41)			
Identity	4.57 ($SD =$	4.52 ($SD =$	4.45 ($SD =$.31	.74	$\leq .001$
Leadership	1.06)	1.17)	1.24)			

Figure 1 – Effect of top-down involvement on willingness to join via collective efficacy and identity leadership



Note. Standardised regression weights. Total effects between brackets.

* $p < .05$, ** $p < .01$.

x1: Support vs. uninvolved; x2: Support vs. opposition.

Discussion

This paper sought out to answer what the effect of municipality involvement in community initiatives on people's willingness to join a local energy movement. The expectation was that there would be either a "cold" instrumental or a "warm" identity pathway within people. Individuals would use the "cold" pathway when collective efficacy mediates the effect of top-down involvement on willingness to join. This led to the assumption that the involvement of governments and municipalities would create a stronger sense of implementation power, increasing people's collective efficacy and willingness to join (H1). Contrary to that, active top-down opposition would create the lowest collective efficacy, lowering people's willingness to join (H2). With identity leadership as a mediator, a person would utilise a "warm" identity pathway that negatively impacts the effect of top-down involvement on willingness to join. People should believe that a group purely composed and run by other community members is more representative of them than one with policy makers involved, leading to the assumption that top-down involvement lowers identity leadership and thus willingness to join (H3). The possible effect of top-down opposition on identity leadership was less clear, leading to the aim to explore whether the effects on willingness to join were positive or negative (explorative).

This study's results indicated that top-down support positively influences willingness to join compared to municipalities being uninvolved or there being opposition, partly supporting H1. Regarding the "cold" pathway, collective efficacy showcased a significant effect on willingness to join. However, the level of municipality involvement did not affect collective efficacy. Concerning the "warm" pathway, identity leadership had a significant effect on willingness to join. Here, municipality involvement did not influence identity leadership as well.

While the positive effect of municipality support remained significant when adding collective efficacy or identity leadership as mediators, there was no mediating effect found for both collective efficacy and identity leadership. Therefore, H1, H2 and H3 were rejected. Regarding the explorative research question, the study data could not clearly answer whether opposition has a positive or negative impact on identity leadership.

Top-Down Involvement and Willingness to Join

One of the study's most relevant implications is its support for collaboration between bottom-up initiatives and policy makers. The results indicate that top-down support induces a higher willingness to join bottom-up projects in people, although its effect is small. This bolsters prior research by Homsy et al. (2019), who recommend collaboration between municipalities and local communities to address complex problems such as the climate crisis. From the perspective of bottom-up group members, this study strengthens previous work that highlights that collaboration with policy makers can make people feel more involved in crucial decision-making, boosting public engagement (Walentek & Jelonek, 2022). Earlier research has signalled that top-down/bottom-up collaboration can help policy makers solve political problems when it comes to implementing possible solutions, by helping community-based projects accomplish small steps at a time instead of installing large-scale answers (Green et al., 2014). This paper adds to these insights, promoting top-down support from bottom-up group members' perspectives. This exemplifies that cooperation can benefit both governments/municipalities and local community members.

Another relevant conclusion from this paper is the backing for collective efficacy and identity leadership as a crucial factors for willingness to join. In this study collective efficacy had a large effect on willingness to join, which is line with the SIMPEA by Fritsche et al. (2018), that identifies collective efficacy as an important determinant for tackling environmental problems in a community setting. In SIMPEA, collective efficacy determines

collective action by affecting people's appraisals and responses to environmental issues. In this study, collective efficacy directly shapes willingness to join, which challenges prior findings where collective efficacy did not predict participants' intention to participate (Lee & Littles, 2021). Identity leadership showcased a significant effect in the study, too. This highlights that both mediators affect willingness to join in distinct ways, suggesting the existence of both a "cold" pathway via collective efficacy and a "warm" pathway via identity leadership towards willingness to join. Identity leadership having a significant effect on willingness to join supports the notion that people are more likely to follow somebody's lead if they believe that a leader is representative of them (Hogg et al., 2012). Recent research by Haslam et al. (2022) indicates that when members of a bottom-up initiative feel like they are doing it for the cause of their community, it bolsters their ability to become leaders in their neighbourhood. Practically, this means that community-based energy projects should be especially effective in places with a high general community identification.

Surprisingly, a pure bottom-up initiative did not generate a higher identity leadership than one with policy makers' involvement or opposition in this study. A possible explanation for this could stem from research on social norms. A paper by Neville et al. (2021) brings up a potentially relevant argument, indicating that attempts of imposing top-down injunctive norms are often stymied by contradicting descriptive norms. For example, policy makers could urge citizens to save money while other top-down representatives invest in expensive goods, creating a negative reaction by the public. In this study, the collaboration of top-down and bottom-up was described positively in the support condition, which might imply that any injunctive and descriptive norms showcased are congruent. This could have limited the potential negative backlash of injunctive and descriptive norms not aligning.

This study's findings have several practical implications for bottom-up energy initiatives. One of the core suggestions is that bottom-up projects should formulate and target

small goals at a time instead of focusing on large-scale solutions from the beginning.

Declaring more feasible objectives as group goals should help generate a higher collective efficacy in people, making them more willing to join. This is in line with previous studies which recognise small steps with little immediate impact as vital progress towards the implementation of group goals for bottom-up initiatives (von Schönfeld & Tan, 2021).

In general, the mediation model in this paper was hampered by weak “a-paths”. Top-down involvement had a direct effect on willingness to join (c-path), and the mediators collective efficacy and identity leadership showed a large impact on willingness to join as well (b-path). However, top-down involvement had no significant effect on the mediators. It is therefore possible that while collective efficacy and identity leadership are key determinants of willingness to join, there are other crucial underlying factors that mediate (or moderate) the relationship between top-down involvement and willingness to join and explain why support seems to yield the best results.

Limitations and Advice for Future Research

Inevitably, the study was exposed to some limitations that restrict the effectiveness of this research. Firstly, the scenario participants read describes a hypothetical collaboration between a local energy project and a municipality. In the support condition, this collaboration is implied to have mostly positive consequences for the community initiative. As explained above, injunctive and descriptive norms not aligning can have a negative effect on the public (Neville et al., 2021). If the collaboration between policy makers and bottom-up initiatives sets out pro-environmental norms and goals but fails to deliver on them, it could damage the reputation of a community-based project. In the scenario, it did not matter whether the partnership between top-down and bottom-up actually worked in practice, which makes lowers the validity of the scenario. The risks of top-down/bottom-up collaboration include diverging views on each side’s responsibilities or on the importance of certain goals (Proka et

al., 2020). To avoid conflict, Castro-Arce and Vanclay (2020) offer several recommendations on how to facilitate a positive collaboration. For one, policy makers should be proactive instead of reactive. That means to go beyond addressing immediate issues and start working together with local actors to achieve long-term strategies. Moreover, tackling environmental issues requires expertise at multiple levels. Therefore, decision-making power and key knowledge should be shared while important tasks and resources should be mindfully split to ensure empowerment of all actors involved.

The next potential limitation has to do with energy-related developments around the time of data collection. Due to Russia's invasion of Ukraine, energy prices increased heavily, creating difficult financial issues for many Europeans (Holzhausen et al., 2022). Participants in this study were clients from Vattenfall Netherlands, who announced around the time of data collection that they would increase energy prices (Séveno, 2022). The tense situation around energy prices might have influenced participants in this study. They might have reacted differently in energy-related topics in the questionnaire, potentially having less trust in energy providers and governments. The opposite effect might have also occurred, with people being more willing to try alternatives after being disappointed by Vattenfall or political decisions that led to the price increase.

Finally, there are some issues with the sample of participants who filled in the study. The sample consisted of clients of Vattenfall with the goal of achieving a representative pool of participants regarding the topic of energy consumption. When analysing the final sample, I do not believe this was achieved. Participants were on average almost 61 years old. Especially younger ages were underrepresented in this study, with only 21 participants indicating to be under 40 years old. In prior research, age was found to be linked to different dimensions of environmentally friendly behaviour (Lynn, 2014). Another issue was the gender distribution. In this study, only 21.4% of participants were female, which is not representative of the entire

population. In past studies, women were found to engage in more pro-environmental actions than men (Kennedy & Kmec, 2018).

Learning from these limitations is important should future research aim to explore the effects of top-down involvement on bottom-up initiatives further. Moreover, I recommend exploring other possible underlying factors that could explain the relationship between top-down involvement and willingness to join. Collective efficacy and identity leadership did not mediate this relationship in this study, however other determinants might. An interesting factor to consider is community identification. Prior studies have already established ingroup identification as a crucial determinant of pro-environmental action, for example in the SIMPEA (Fritsche et al., 2018). The potential of group identification for bottom-up projects is highlighted in a paper by Jans (2021). I think a measure for community identification would be important to observe when assessing people's willingness to join a community-based energy project, and could also do well in accounting for individual differences. It would be interesting to analyse if and how top-down involvement might affect people's identification with their community and the ensuing consequences for local energy initiatives. Other factors, for example social norms, could offer potentially relevant insights as well. As described above, injunctive and descriptive norms being not aligned can hinder the collaboration of municipalities and local energy projects. A measure capturing people's perception of there being alignment or not could be a crucial determinant for the potential effects of top-down support. In general, future research should explore the consequences of top-down involvement further. This aspect of the paper's theoretical assumptions was weak in the study, as top-down involvement was not linked to neither collective efficacy nor identity leadership. Multiple possible determinants of willingness to join could be tested to identify a factor that would be affected by top-down involvement. This would increase the chances of demonstrating a mediation effect.

On a final note, this study was, to my knowledge, the first to investigate the effect of top-down involvement on bottom-up initiatives from the viewpoint of citizens. This means that there needs to be more research done on potential factors that are influenced by top-down involvement. This could include qualitative research with members of community-based energy projects to pinpoint key aspects that dictate the success of municipality involvement. In general, future studies should focus on community members' perspectives to add to the already existing literature which examines the quality of concrete results of top-down/bottom-up collaboration. More research in this field is necessary to allow for firmer conclusions and more detailed insights.

Conclusion

This paper sought to explore the effect of top-down involvement in community-based energy projects. The expectation was there would either be a “cold” instrumental pathway or a “warm” identity pathway that defines the relationship between policy makers and bottom-up groups. The “cold” pathway would increase collective efficacy leading to top-down involvement creating a positive effect for willingness to join. Top-down involvement could also have negative consequences for willingness to join, induced by the “warm” pathway that suggests that municipality involvement would create a lower identity leadership. The results of this study suggest that top-down support generates the highest willingness to join a community-based energy project in citizens. This is not only important for bottom-up initiatives but should also motivate governments and municipalities to approach community movements and offer their support, to reinforce joint efforts of tackling environmental problems. While collective efficacy and identity leadership had a large effect on willingness to join, they did not mediate its relationship with top-down involvement in this study. Analysing the effect of top-down involvement on bottom-up initiatives from a bottom-up viewpoint is a new approach that requires further research to allow for clearer conclusions and

expand the insights from this paper. It could be that there are other underlying factors that explain the relationship of top-down involvement and willingness to join a bottom-up initiative better. A better understanding of the underlying factors that impact people's perceptions of bottom-up energy movements, especially those who work jointly with local municipalities and governments, can offer great opportunities to improve pro-environmental measures. The EU has already set about promoting energy communities in an effort to accelerate the energy transition (European Commission, n.d. -b). More information about key factors would help to increase the effectiveness and thus the benefits of energy communities.

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Appendices

Appendix A – Manipulation Texts

Support Condition

Please imagine the following scenario:

SMART: A local energy initiative in your neighbourhood, with the support and involvement of the municipality

Residents of your neighbourhood, together with the municipality, have established an initiative called "SMART" to promote sustainable energy consumption in your neighbourhood. Participation in "SMART" is voluntary and the initiators and the municipality have jointly agreed on the energy-saving measures they want to take. The SMART initiative plans to use smart meters in the neighbourhood to encourage more efficient, and therefore more sustainable, collective energy consumption.

Smart meters measure the current energy demand in an area. They recommend waiting to use appliances when energy demand is high (e.g. in the morning when people are getting ready for work/school) and starting appliances when energy demand is low. Balancing the energy demand in a neighbourhood over the day eases the load on the energy grid and reduces overall energy consumption. If users give permission, a smart meter can provide specific feedback on the use of each household appliance individually via an app.

With the SMART initiative, residents of your neighbourhood and the municipality aim to make your neighbourhood's energy consumption more sustainable.

Uninvolved Condition

Please imagine the following scenario:

SMART: A local energy initiative in your neighbourhood, founded by people in your neighbourhood

Residents in your neighbourhood have themselves set up an independent initiative called "SMART" to promote sustainable energy use in your neighbourhood. The municipality is not involved in this initiative. Participation in "SMART" is voluntary and the initiators have jointly agreed on the energy-saving measures they want to take, The SMART initiative plans to use smart meters in the neighbourhood, to encourage more efficient, and therefore more sustainable, collective energy consumption.

Smart meters measure current energy demand in an area. They recommend waiting to use appliances when energy demand is high (e.g. in the morning when people are getting ready for work/school) and starting appliances when energy demand is low. Balancing the energy demand in a neighbourhood over the day eases the load on the energy grid and reduces overall energy consumption. If users give permission, a smart meter can provide specific feedback on the use of each household appliance individually via an app.

With the SMART initiative, residents of your neighbourhood want to make your neighbourhood's energy consumption more sustainable, without depending on the municipality.

Opposition Condition

Please imagine the following scenario:

SMART: A local energy initiative in your neighbourhood, despite opposition from the municipality

Residents in your neighbourhood have themselves set up an independent initiative called "SMART" to promote sustainable energy use in your neighbourhood. The municipality disagrees with this initiative, because the initiative's plans obstruct a project of the municipality. Participation in "SMART" is voluntary and the initiators have jointly agreed on the energy-saving measures they want to take. The SMART initiative plans to use smart

meters in the neighbourhood to encourage more efficient, and therefore more sustainable, collective energy consumption.

Smart meters work by measuring the current energy demand in an area. They recommend waiting to use appliances when energy demand is high (e.g. in the morning when people are getting ready for work/school) and starting appliances when energy demand is low. Balancing the energy demand in a neighbourhood over the day eases the load on the energy grid and reduces overall energy consumption. If users give permission, a smart meter can provide specific feedback on the use of each household appliance individually via an app.

With the SMART initiative, residents of your neighbourhood want to make your neighbourhood's energy consumption more sustainable, despite opposition from the municipality.

Appendix B – Measures of this Study

The following questions are designed to gauge your opinion on "SMART".

Please indicate on a scale of 1 to 7 the extent to which you agree.

Willingness to Join

Table 2 – Willingness to join measure

	1 – Completely disagree	2 3	4 - Neutral	5 6	7 – Completely agree
I approve of the SMART initiative.					
I want to be involved in the SMART initiative.					
I am interested in participating in the SMART initiative.					

Collective Efficacy

Table 3 – Collective efficacy measure

	1 – Completely disagree	2 3	4 - Neutral	5 6	7 – Completely agree
I think the SMART initiative can promote a just and sustainable energy transition.					
I think SMART initiative can promote an energy transition that is equitable and sustainable.					

I believe joint actions by SMART

members can lead to a just and

sustainable energy transition.

Identity Leadership

Table 4 – Identity leadership measure

	1 –	2	3	4 -	5	6	7 –
	Completely			Neutral			Completely
	disagree						agree
The SMART initiative is							
representative of residents in my							
neighbourhood.							
The SMART initiative creates a							
sense of belonging among residents							
of my neighbourhood.							
The SMART initiative represents							
the interests of residents in my							
neighbourhood.							
The SMART initiative engages in							
activities that are useful to the							
residents of my neighbourhood.							

Manipulation Check

To what extent do the following statements apply to the scenario you have read?

Table 5 – Manipulation check

	1 – Completely	2	3	4 -	5	6	7 –
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disagree

Neutral

Completely

agree

The municipality is involved in
and supports the SMART
initiative.

The SMART initiative was only
set up by residents in your
neighbourhood.

The municipality opposed the
SMART initiative.

Appendix C – Assumption Testing

Linearity

The partial scatterplots between the DV and the mediators do not show a non-linear relationship (See figures 2 and 3). The assumption of linearity is met.

Figure 2 – Partial scatterplot of willingness to join and collective efficacy

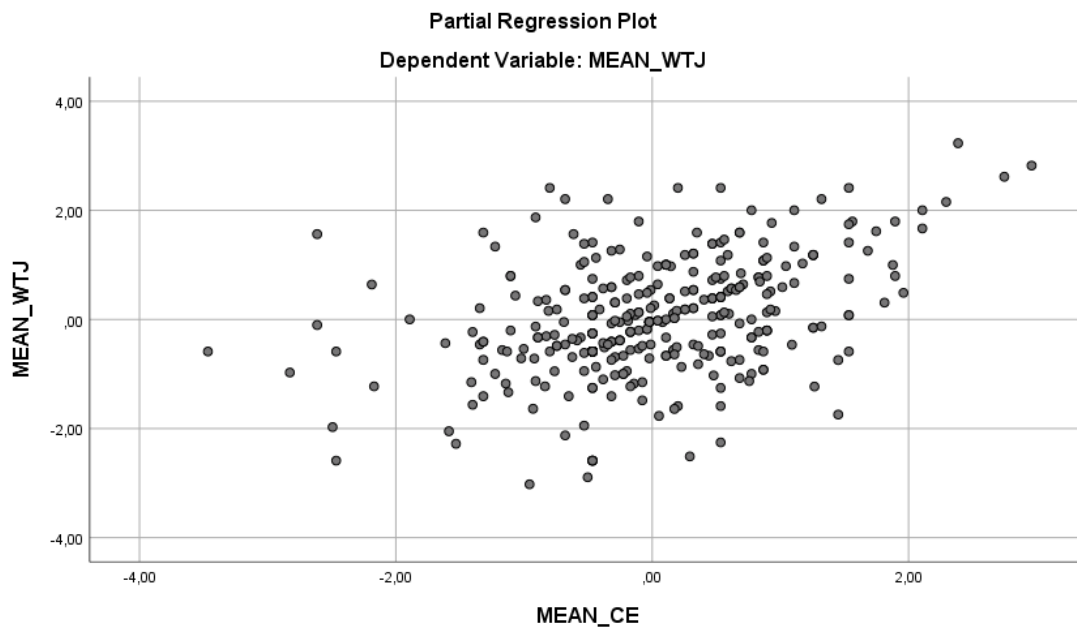
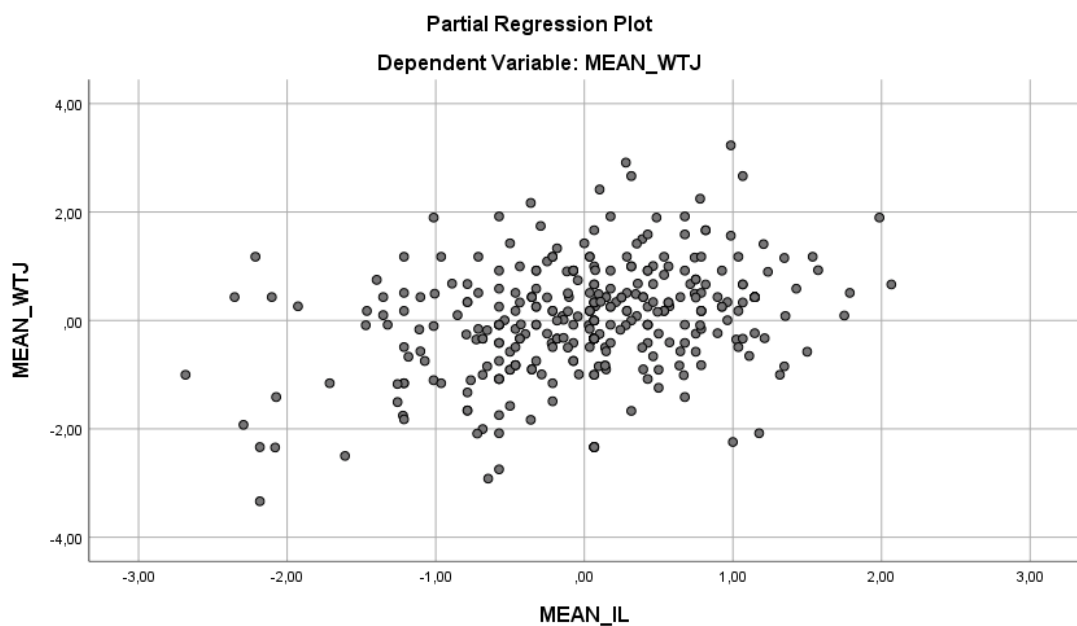


Figure 3 – Partial scatterplot of willingness to join and identity leadership



Normality

The histogram shows a normal distribution (Figure 4). In the p-p plot, all points are near the diagonal line (Figure 5). Thus, the data meets the normality assumption.

Figure 4 – Histogram

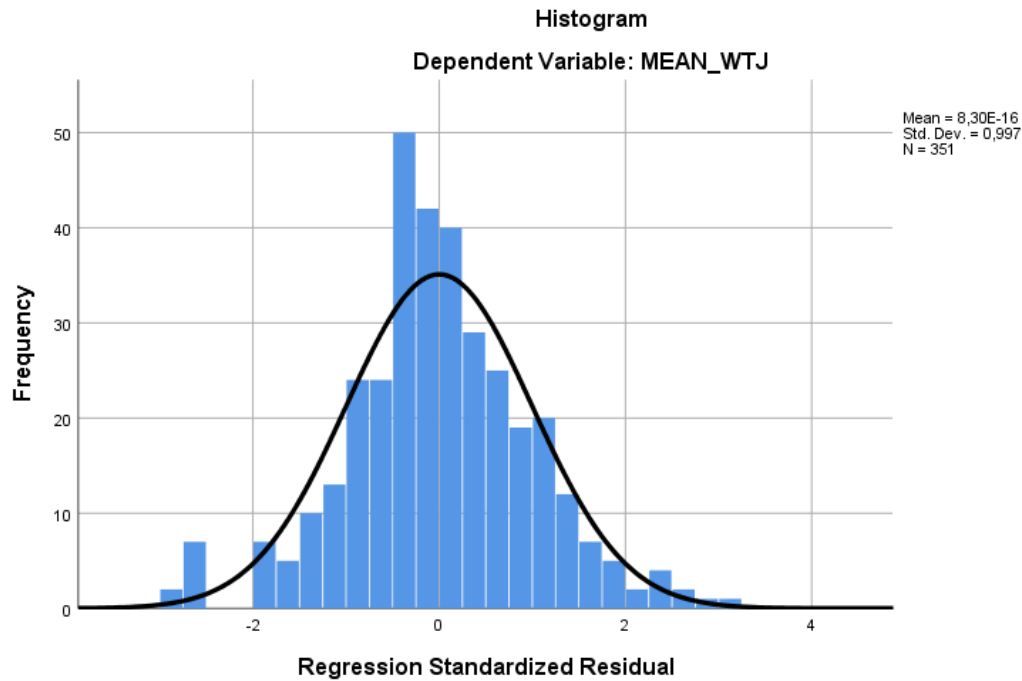
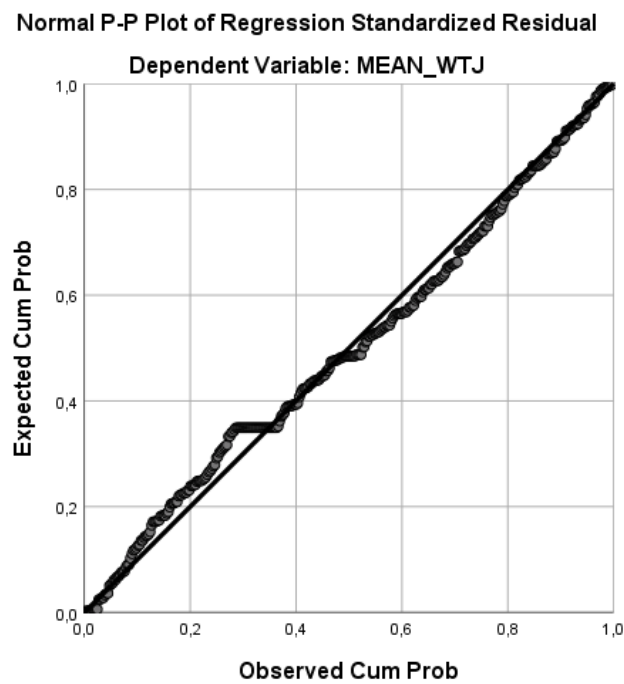


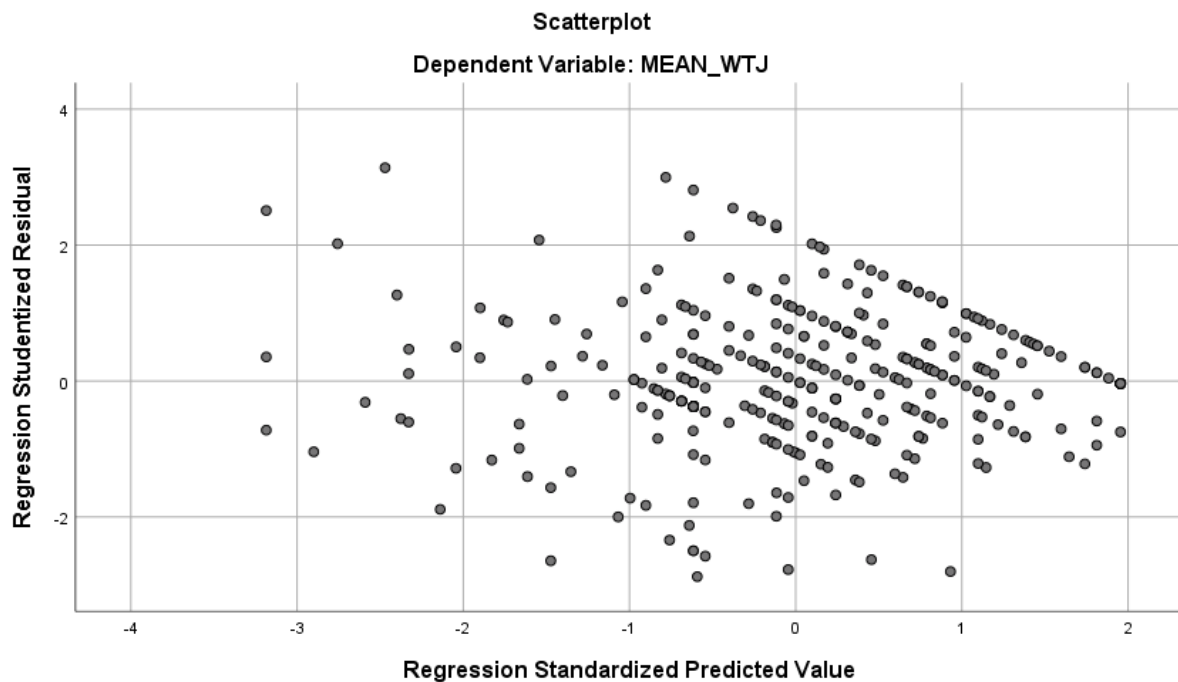
Figure 5 – P-P plot of standardised residuals



Homoscedasticity

The scatterplot of the studentised residuals and the standardised predicted values shows a random, non-systematic shape (Figure 6). Thus, the assumption of homoscedasticity is met.

Figure 6 – Scatterplot of studentised residuals and standardised predicted values



Independent Residuals

To check for the independence of residuals, the Durbin-Watson statistic was looked at (Table 6). As the statistic value is close to 2 (1.94), the data meets the assumptions for independent residuals.

Table 6 – Durbin-Watson statistic

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.75	.56	.55	.94	1.94

Predictors: Collective efficacy, identity leadership; Dependent variable: Willingness to join

No Multicollinearity

Table 7 shows collinearity statistics. The variance inflation factors for both collective efficacy and identity leadership are below 10. Because of this, there is no indication of multicollinearity.

Table 7 – Collinearity statistics

Model	Unstandardised		Standardised			Collinearity	
	Coefficients		Coefficients			Statistics	
	B	Std. error	Beta	t	Sig.	Tolerance	VIF
Constant	.80	.21		3.80	.00		
Collective Efficacy	.48	.06	.46	8.69	.00	.46	2.20
Identity Leadership	.41	.06	.34	6.35	.00	.46	2.20

Dependent variable: Willingness to join