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# Future energy communities

## How community norms shape adoption and acceptability of smart energy systems

### Introduction

Most research on factors influencing the acceptability and adoption of new energy systems is focused on individual-level factors such as personal norms, values, and attitudes. Some researchers have considered the effects of social factors such as descriptive and injunctive norms, but little research has been conducted on social factors at the community level, such as neighborhood identity and participation. The latter may play an important role in promoting the use of sustainable energy systems – as exemplified by various recent bottom-up approaches to establish local energy systems in the Netherlands. In this study, we consider the role that local communities can play in promoting the acceptability and adoption of sustainable energy systems. More specifically, we test to what extent community norms, and established sustainability norms on a community level, affect individual acceptability and adoption of sustainable energy systems. We expect this effect to be moderated by the level of identification a person has with their community. We will present results of a questionnaire study among 200 Dutch citizens who are participating in an energy transition project. Results show that community-level factors are indeed related to acceptability and adoption of renewable energy systems.

### Method

#### Sample

$N = 110$ ,  $M_{age} = 44.3$  years,  $SD_{age} = 11.2$  years

#### Questionnaire

Acceptability: 2 items,  $\alpha = .89$

*e.g. I find smart energy systems to be very acceptable*

Injunctive Norm: 1 item

*e.g. Other residents of my neighbourhood will deem it important to use smart energy systems in the future*

Personal Norm: 3 items,  $\alpha = .81$

*e.g. I would feel morally obliged to use smart energy systems*

Group-id: Self-stereotyping: 2 items,  $\alpha = .80$

*e.g. I have a lot in common with the average resident of my neighbourhood*

### Results

People who perceive strong injunctive norms toward adoption of new energy systems also have strong personal norms on the topic. Our results show that this relationship is stronger for people who identify more strongly with their community. See Figure 1.

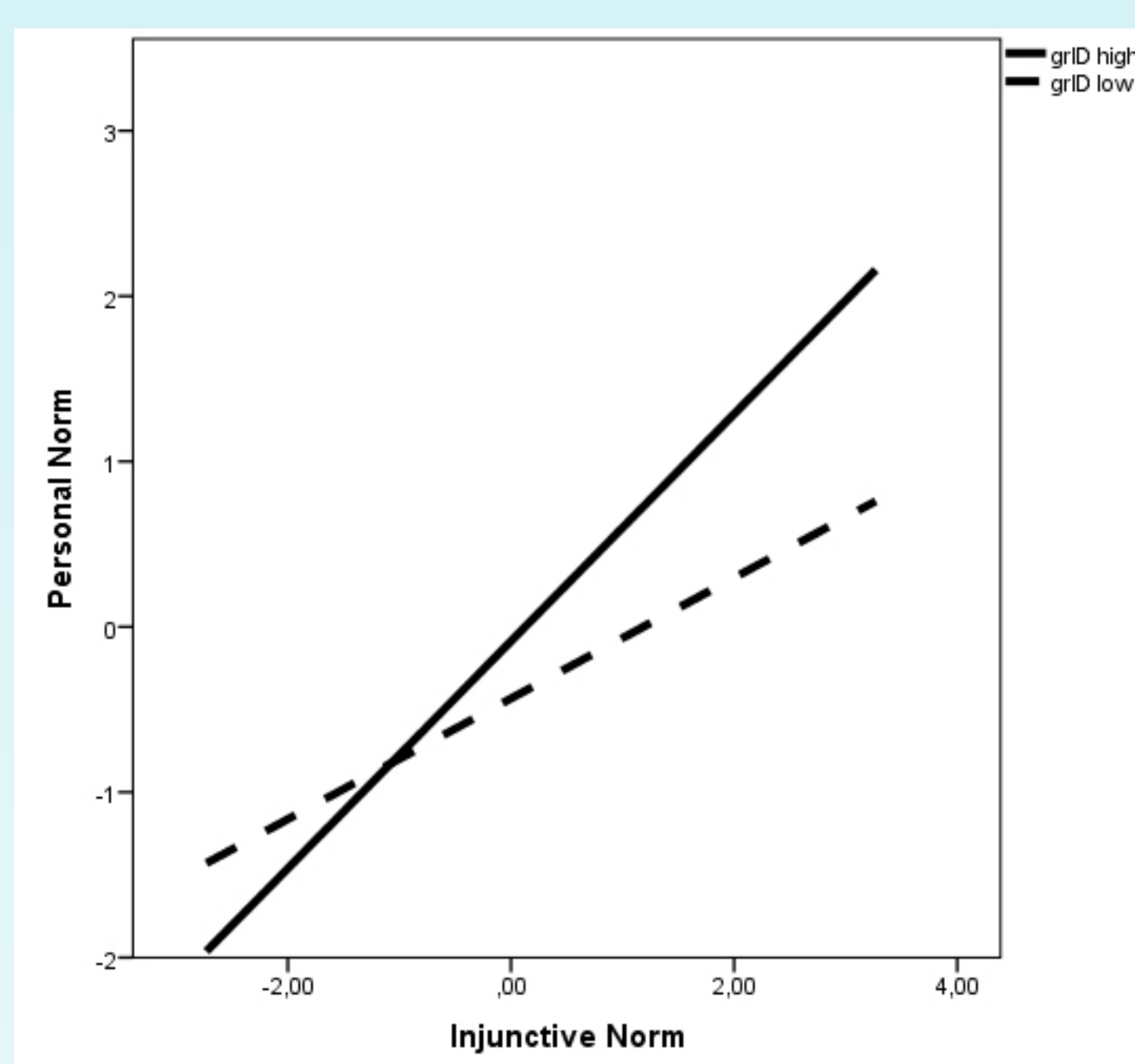


Figure 1.

Injunctive norms influence behavior indirectly, via personal norms. We call this process internalization. See Figure 2.

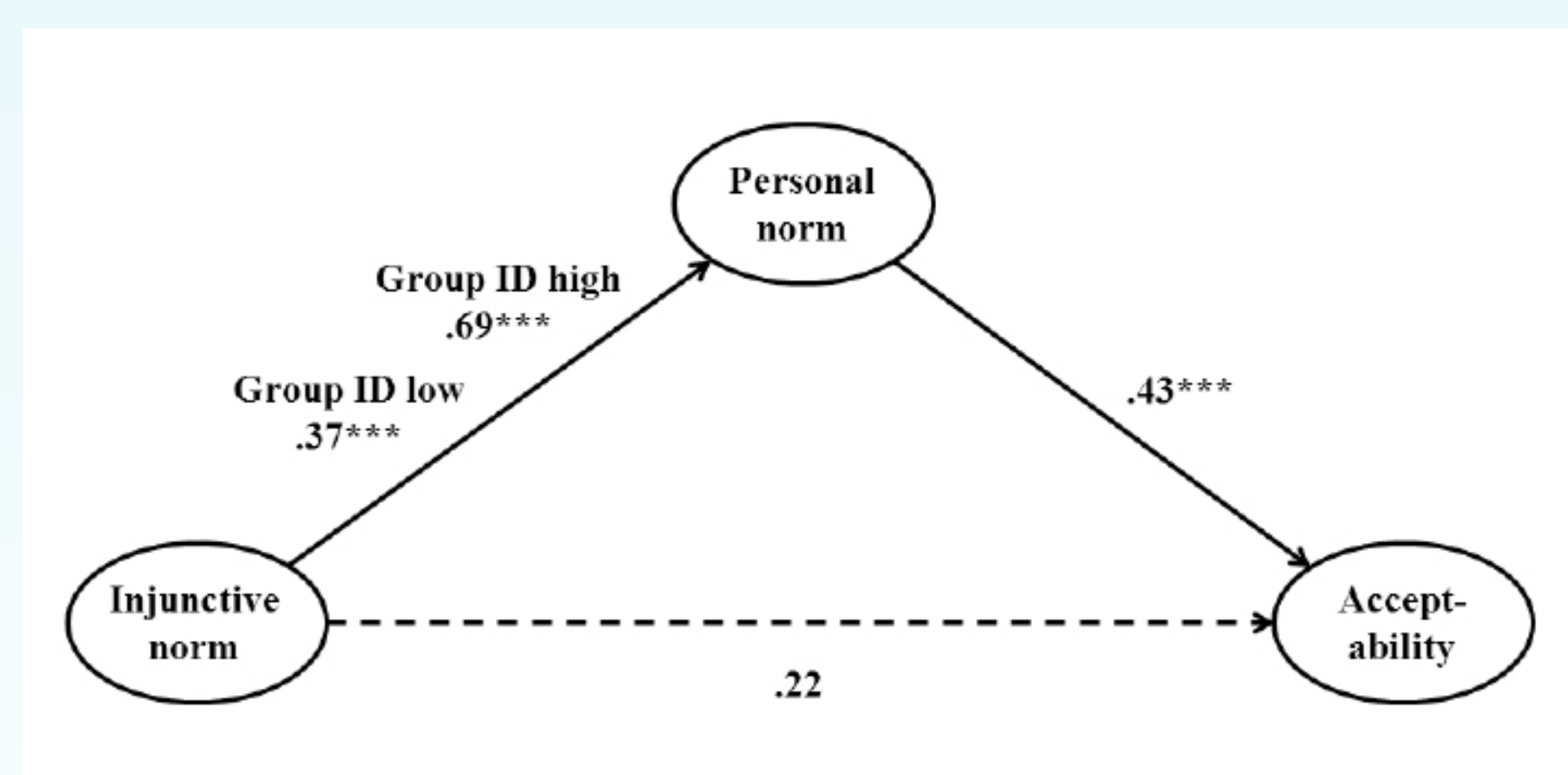


Figure 2. Model  $R^2 = .27$

### Discussion

We proposed that the stronger people identify with their community, and the more the community feels the adoption of the new energy system is important, the more strongly will the community norm toward adoption be internalized by its members. These results are a first step in our research to explore how norm internalization takes place and how internalized norms mediate the influence of social norms on behavior. Although our design is correlational, our results suggest that internalization of group norms can take place, and that this internalization is stronger for people who identify more with their community. As a next step, experimental research will have to confirm the causal direction of the relationship between social norms, personal norms and behavior.

### Project

This data was collected as a part of the **Smart grid: rendement voor iedereen** project. The aim of the project is to test different ways by which a successful energy transition can be made to renewable energies. The project focuses on household energy use and takes place in two pilots in the Dutch cities of Utrecht and Amersfoort.

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