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The Psychological Costs of Citizen Coproduction

Abstract

Coproduction where citizens collaborate with public employees in producing and delivering public services is often argued to be associated with benefits for either participating citizens, their relatives, friends, or society at large. Less is known about the potential downsides associated with citizen participation in coproduction of public services. We argue that psychological costs such as experiences of stigma, stress, and loss of autonomy may arise among citizens in response to coproduction initiatives stimulated or directly imposed by public organizations. We test our propositions in two randomized vignette experiments on a representative sample of Danish citizens. First, we manipulate whether citizens are encouraged to coproduce public services yielding private or collective benefits. Second, we induce perceived self-efficacy among a subsample of citizens. We find that citizens are more likely to experience psychological costs when they are encouraged to coproduce public services resulting in private benefits for relatives or friends in contrast to collective benefits for a larger group of people. Furthermore, these psychological costs are felt to a greater extent among citizens with low self-efficacy. Fusing insights from multiple perspectives, our study pushes the theoretical frontiers of coproduction literature by illustrating how complex emotional responses is an overlooked, but integral part of a more comprehensive theory on the manifestations and effects of citizen coproduction.
Keywords

coproduction; psychological costs; self-efficacy; experiment

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Introduction

Coproduction where citizens\(^1\) collaborate with public employees in producing and delivering public services that either benefit themselves, relatives, friends, or entire communities are increasingly used in Western governments to keep costs low while simultaneously maintaining or increasing the quality of public services (Brudney 1983; Percy 1983; Pestoff 2009; Voorberg et al. 2018). While a long stream of research has discussed who participate in and benefit from coproduction (Alford 2009; Bovaird 2007; Bovaird et al. 2015; Brandsen and Honingh 2016; Nabatchi et al. 2017; Parks et al. 1981) and documented positive effects from coproduction initiatives on citizen voice, coproduction behaviors, cost-efficiency, and equity (Andersen, Nielsen and Thomsen 2019; Hjortskov, Andersen and Jakobsen 2018; Jakobsen 2013; Jakobsen and Andersen, 2013), we know little about the potential downsides associated with coproduction initiatives encouraging citizens to participate in coproduction of public services.

To understand why citizens sometimes coproduce and not at other times, it is important to understand the potential costs that coproduction initiatives encouraging citizens to coproduce may also create. We propose that coproduction initiatives initiated by state or government that encourage citizens to coproduce may create unintended psychological costs such as feelings of stress, stigma, and loss of autonomy that in turn potentially manifest in a reduced willingness to coproduce. It is
therefore of critical importance to explore whether and, if so, under what circumstances citizens experience psychological costs in response to coproduction initiatives.

We argue that citizens are particularly likely to experience psychological costs when they are encouraged to participate in coproduction of services that yield private benefits (Brudney and England 1983) to an individual with whom the citizen feels a strong emotional and personal attachment and obligation to help; such as a relative or a friend. Thus, citizens are more likely to experience psychological costs when they are encouraged to participate in the coproduction of services that yield private benefits (e.g., helping a family member living at a nursing home) in contrast to coproducing services that yield collective benefits (e.g., helping as a volunteer at a nursing home where none of the residents are relatives or friends). Moreover, we argue that citizens’ experiences of psychological costs depend on their resources; in particular, the degree to which citizens feel capable of executing the actions that are required for the successful execution of a given service task. Accordingly, we expect psychological costs to be more pronounced among citizens with low self-efficacy (Bandura 1977).

We test our two propositions via two randomized vignette experiments among a representative sample of Danish citizens aged 40-64 years. We manipulate—first—whether citizens are encouraged to participate in coproduction of services that yield private or collective benefits and—second—citizens’ perception of self-efficacy. Elderly care is the empirical context of our study, and we focus on a situation in which citizens are encouraged to coproduce elderly care services at a nursing home that either benefit a relative, thus yielding private benefits, or elderly residents in general, thus yielding collective benefits.

We find that citizens are more likely to experience stigma and stress and less likely to experience autonomy when they are encouraged to participate in coproduction yielding private benefits for relatives or friends in contrast to collective benefits for a larger group of citizens.
Furthermore, psychological costs are felt to a significantly greater extent among citizens with low self-efficacy. In addition to the novelty and relevance of our theoretical arguments, these findings have important practical implications. Psychological costs associated with participation in coproduction may prevent citizens from participating in or sustaining their commitment to specific service tasks. If psychological costs are felt more heavily among some citizens than others and the quality of public services depend on citizen coproduction, this may be an additional source of inequality in service quality and quantity among service recipients.

The following sections present a classification of the coproduction concept and provide a theoretical discussion of why and under what circumstances psychological costs are likely to arise in a coproduction setting. We then introduce our empirical case of elderly care in Denmark and discuss how we investigate our research questions using randomized vignette experiments. Finally, we present our empirical findings and conclude with a discussion of implications for theory and practice.

**Classifying Citizen Coproduction**

The concept of coproduction has been highly disputed and defined in numerous ways since its development in the late 1970s and early 1980s (see, e.g., Alford 2009; Bovaird 2007; Bovaird et al. 2015; Brandsen and Honingh 2016; Brudney and England 1983; Nabatchi et al. 2017; Parks et al., 1981). One of the first definitions outlined by Parks and colleagues (1981) defines coproduction as the mixing of inputs from public employees and service users to the provision of public services. While early definitions were delimited to service users or relatives of service users working together with public employees on the production of public services (Pestoff 2012), later definitions have expanded the coproduction concept to include inputs from other non-state participants than service users and their relatives, such as community group members or citizens who act as volunteers.
As argued by Brudney and England (1983) and later by Bovaird and colleagues (2015), coproduction can manifest in various forms. This is illustrated by the coproduction typology developed by Bovaird and colleagues (2015) presented in table 1.

[Table 1]
According to this typology, two core distinctions are important for the categorization of coproduction. The first criterion concerns whether inputs from non-state actors such as service users (or their relatives), community groups, or volunteers are provided by a single individual or collectively by a group of individuals. The second criterion concerns whether coproduction yields (1) private benefits that are enjoyed mainly by those directly involved in coproduction or their relatives/friends or (2) collective benefits that are enjoyed by a wider group of people who do not necessarily contribute to the public service production (Brudney and England 1983; Bovaird et al. 2015). Examples of coproduction that mainly result in private benefits include a patient working with health professionals on different activities for the sake of improving their own health (Jakobsen and Andersen 2013; Nabatchi et al. 2017) and family members assisting a relative living at a nursing home with practical tasks or personal care (Pestoff 2012). In contrast, examples of coproduction yielding collective benefits enjoyed by a wider group of individuals who do not necessarily contribute to coproduction include community groups that help clean streets and empty trash bins in community parks (Brudney and England 1983) and volunteers that arrange social activities for a group of elderly people living at a nursing home.

Using these two criteria, we focus on coproduction of public services that includes either (1) private benefits for relatives/friends or (2) collective benefits for a wider group of individuals who do not participate in coproduction, as this can be linked to systematic differences in the experience of psychological costs in response to coproduction initiatives. Hence, we focus on those types of
coproduction in which the participant in and the beneficiary of coproduction are not the same individual. This is, for example, the case of coproduction of many social services (e.g., preschool, primary education, home care for people with disabilities or elderly care) in which relatives, friends or volunteers help with coproducing services because the beneficiary is either a minor or incapacitated (see Pestoff 2012). Before we discuss why the distinction between private and collective benefits is important for the experiences of psychological costs, we first discuss why encouragements to coproduce might create psychological costs among citizens.

**The Psychological Costs of Citizen Coproduction**

In existing research on coproduction, several scholars highlight benefits resulting from the participation of service users, relatives, community groups, and volunteers in coproduction of public services. Such benefits include higher service quality and greater cost-efficiency (Brudney 1983; Jakobsen and Andersen 2013; Percy 1983). Contrary to this line of studies, we argue that encouragements to participate in coproduction of public services may also create psychological costs for citizen coproducers. To develop this argument, we transfer the conceptualization of psychological costs in the literature on administrative burden (e.g., Moynihan, Herd, and Harvey 2015; Herd and Moynihan 2018; Christensen et al. 2019) to the literature on coproduction.

This concept refers to a range of undesirable psychological reactions to citizen-state encounters, such as feelings of stigma (Bhargava and Manoli 2015; Currie 2006; Moffit 1983), disempowerment (Dias and Maynard-Moody 2007), loss of autonomy (Lipsky 1980; Soss 1999), and stress (Moynihan et al. 2015). Psychological costs are undoubtedly relevant to citizen-state interactions in which citizens are clients of a service or forced into undesired relationships (Moynihan, Herd, and Harvey 2015). In such interactions, psychological costs are typically caused by external pressures with distinct institutional expressions. Although citizen participation in
coproduction often is regarded as voluntary (Brudney and England 1983; Nabatchi et al. 2017), we argue that individual citizens are likely to feel a pressure – mainly due to social norms about appropriate behaviors – that may lead to psychological costs in coproduction settings as well. Specifically, we argue that individual citizens may feel a moral obligation to participate in coproduction if it benefits someone whom the citizen is emotionally or personally attached to, such as a relative or a close friend. Examples range from grandparents or elderly citizens assisting in the local child care center, over parents reading with their child, to relatives assisting family members or friends with personal care in nursing home facilities. Citizens may thus incur psychological costs if they feel an obligation to participate in coproduction of services that they do not feel qualified for, do not feel that they have the necessary time for, feel have been imposed on them, or feel should be the responsibility of the state. Psychological costs are therefore highly relevant to consider in coproduction settings.

Based on these considerations, we argue that citizens are more likely to experience psychological costs when they are encouraged to participate in coproduction of services yielding private benefits for relatives or friends compared to coproduction of services yielding collective benefits for a wider group of people that do not necessarily themselves contribute. Our argument is based on an assumption about the mechanism underlying this relationship: Individuals feel compelled by moral obligation to benefit other individuals to whom they are personally and emotionally attached. If no such obligation is felt, they can simply choose to ignore calls for engaging in coproduction – whether entailing private or collective benefits – without experiencing emotional strain from non-participation. However, if citizens do feel a moral obligation to benefit individuals to whom they are personally and emotionally attached – which is more likely to be the case with coproduction yielding private benefits for relatives and friends than for coproduction
involving collective benefits for a large group of people – encouragement to participate in coproduction is more likely to instigate experiences of psychological costs.

One example is relatives to elderly citizens residing at nursing homes. Assisting a relative with practical tasks or personal care results in benefits enjoyed privately by the relative, such as higher quality of living, and citizens are therefore likely to feel compelled by moral obligation to participate in such service tasks. Feeling responsible is thus a main reason for providing care to relatives (Twigg and Atkin 1994). Indeed, care-giving research has demonstrated that in virtually all countries, most children care for their parents when there is a need for it (Chappell and Funk 2012, 1129; Montgomery, Borgatta, and Borgatta 2000). Thus, there seems to be a world-wide sense of obligation to care for elderly parents when the alternative is a lower quality of living.

However, engaging in coproduction out of moral obligation can trigger a sense of loss of individual autonomy, as the decision to coproduce is no longer self-determined. According to the well-established theory of self-determination, individuals experience poorer well-being and less psychological growth when one’s actions are externally regulated or imposed by obligation (Ryan and Deci 2000). In our example, the moral obligation to coproduce contrasts with the focus on individual autonomy (Chappell and Funk 2012, 1130). Citizens can feel obligated to participate in coproduction in order to ensure proper quality of care for their family member, and a perceived loss of autonomy is therefore more likely to occur for coproduction resulting in a private benefit for relatives and friends as compared to coproduction producing collective benefits and for which a moral obligation to coproduce is less likely to be present. Other examples include parents to school-age children who are encouraged to read with their children on a daily basis to help improve their literacy, relatives to hospitalized patients who are encouraged to assist in rehabilitation efforts, and citizens who are encouraged to take care of relatives discharged from the hospital.
In addition to experiences of loss of autonomy, other psychological costs, such as stress and stigma, are also likely to arise to a greater extent in the case of encouragement to participate in coproduction resulting in private benefits. According to Weinstein and Ryan (2011), autonomous functioning is an important antecedent of stress incursion. Individuals who feel autonomous process stressful events and respond to their environment in ways that avoid or alleviate the emotional strain associated with stress incursion (Weinstein and Ryan 2011, 7-8). For example, individuals who participate in coproduction based on their own volition may adopt non-defensive approaches to coproduction of tasks, framing them as challenges that they took on out of free will rather than as threats or obstacles to their everyday routines and schedules. Coproduction that produces private benefits and is based on moral obligation thus increases experiences of stress by crowding out the sense of volition and self-determination associated with feelings of being autonomous in one’s actions and decisions. Thus, the sense of moral obligation tied to coproducing services that yield private benefits may lead to stress whenever there is a conflict between the obligation that individuals feel and their potential inability to conform with this obligation (Rae 1998).

Finally, social norms can prescribe helping and caring behaviors – especially for family or friends – as appropriate and desirable within a society. For example, citizens may worry what others will think of them if they do not help relatives. The anguish suffered by citizens from failure to comply with social norms can manifest as guilt or shame (Posner and Rasmussen 1999) and lead to fear of being publicly stigmatized. Again, these psychological costs are more pronounced when citizens are encouraged to participate in coproduction resulting in private benefits because citizens face a moral obligation and social norm to care for family and close friends. Across these cases, the sense of moral obligation associated with coproduction producing private benefits for a family member or a friend produces psychological costs in the shape of stress, stigma, and loss of autonomy, and we therefore derive our first hypothesis based on this argument:
Hypothesis 1. Citizens are more likely to experience psychological costs when they are encouraged to participate in coproduction of services resulting in private benefits for relatives or friends in contrast to coproduction of services resulting in collectives benefits for a larger group of people.

Based on insights from the literatures on coproduction and administrative burden (Moynihan, Herd, and Harvey 2015; Jakobsen and Andersen 2013 Jakobsen 2013; Herd and Moynihan 2018), we furthermore propose that personal resources are important for whether, and to what extent, citizens incur psychological costs. Previous research demonstrates that the ability to comply with administrative requirements varies across subgroups of the population (e.g., Cherlin et al. 2002; Brodkin and Maymundar 2010) and we consider similar patterns likely in the context of citizen coproduction. With psychological costs being inherently a question of personal experiences, we argue that belief in one’s capability to perform a particular task, known in the literature as self-efficacy (Bandura 1977), is particularly relevant to the experience of psychological costs. The question therefore becomes whether differences in self-efficacy influence the extent to which citizens experience psychological costs. Distinct from actual capability to deal with obstacles and problems, self-efficacy can be defined as the extent to which citizens feel capable of executing a given task (Bandura 1977). The importance of self-efficacy has been documented across a range of domains, including the cognitive effort that people assign to (1) dealing with problems at hand, (2) making decisions, and (3) persevering in the face of difficulties and setbacks (Bandura 1993; Locke and Latham 1990). When faced with obstacles and setbacks, those who doubt their own capabilities “slacken their efforts, give up prematurely, or settle for poorer solutions”, whereas those who have stronger beliefs in their own capabilities increase their effort to overcome the challenges (Bandura
Importantly, positive effects of self-efficacy have also been identified in relation to coping with burdensome personal events (Romero-Moreno et al. 2011).

As noted above, psychological costs can arise because citizens do not feel knowledgeable or skillful when encouraged to participate in coproduction resulting in private or collective benefits. Our general expectation is therefore an inverse relationship between self-efficacy and experience of psychological costs, meaning that citizens with higher self-efficacy will experience stigma, stress, and loss of autonomy to a lower degree compared with citizens who feel less self-efficacious. For example, citizens who generally feel ill-equipped to assist a relative at a nursing home are more likely to incur stress because they are concerned with making inadequate decisions or because of non-participation altogether. On the other hand, citizens who generally feel competent about their abilities to execute different practical or care tasks successfully are less likely to incur the emotional strain associated with stress. People with lower levels of self-efficacy are also expected to be more concerned about what others think because of generally lower levels of self-esteem, in turn being more likely to experience stigma in response to coproduction tasks. Finally, we expect that a lower level of self-efficacy is associated with feelings of autonomy loss because of the unpleasant gap that such citizens feel between the perceived obligation to coproduce and their perception of lacking the abilities to do so. In sum, this leads to our second hypothesis:

Hypothesis 2. Experiences of psychological costs associated with participation in coproduction are felt to a greater extent among citizens with low self-efficacy.

Research Design and Data

To provide a strong empirical test of our hypotheses, we need to meet two types of requirements. First, reverse causality between self-efficacy and psychological costs and unobserved
variables such as task complexity—which may influence whether coproduction initiatives are launched and the psychological costs felt from coproducing—are likely to bias the findings of a study based solely on non-experimental observational data. To deal with these issues, we test our propositions using a randomized vignette experiment embedded in a survey. The vignette experiment holds several advantages for our purpose. It combines the flexibility of an electronic survey, allowing us to reach a broad sample of respondents, with the strong internal validity characterizing experiments. By randomly assigning subjects to different vignette conditions, we construct our independent variables, self-efficacy and encouragement to participate in coproduction of services yielding private and collective benefits, as exogenous to our variable of interest – experiences of psychological costs. Randomization thus effectively creates a counterfactual, for instance, by instigating a sense of self-efficacy among a randomly selected group of subjects but not another.

Second, testing our hypotheses requires a case in which (1) both volunteers and relatives help with public service production and (2) volunteers and relatives assist with similar services to keep task complexity constant. Danish elderly care services in the form of assisting elderly living at nursing homes fulfill these requirements. Nursing homes rely on both relatives and volunteers to assist elderly with different tasks. This allows us to frame participation in coproduction of elderly care services yielding private benefits (i.e., helping an elderly family member) or collective benefits (i.e., helping a wider group of elderly citizens). Moreover, both volunteers and relatives participate in a variety of comparable tasks at nursing homes (FOA, 2016), some requiring no specialized skills or knowledge about elderly care, such as social gatherings (e.g., talking and walking with elderly), and others requiring specialized skills and knowledge. An example of the latter is assisting elderly with reduced chewing and swallowing abilities safely prepare and consume their meals (Thomsen and Jensen 2019). Services such as preschool, primary education, and care for people with
disabilities may also fulfill these requirements, but we choose to test our hypotheses in the area of elderly care services because volunteers constitute more prevalent inputs to service production at nursing homes compared to preschools or primary education in Denmark (FOA, 2016). In doing so, we improve the mundane realism of our vignette experiment.

Together with a number of Northern European countries, Denmark is somewhat unique in having an extensive welfare state in which most social services are paid for and delivered by government entities. This implies that citizens do not commonly provide services such as caring for elderly family members by having them at home or homeschooling children. Rather, the provision of such basic services is delivered by public institutions like child care centers, schools, health care clinics, and nursing homes. When encouraged to coproduce these services, citizens might therefore feel psychological costs to a greater extent because coproduction of such services often is, at least to some extent, compensating for less resources in terms of personnel, time, and money. On the other hand, one might also expect that negative feelings of stigma might be less severe given the weaker cultural and social norms about providing services such as caring for elderly family members in people’s private homes. As we return to in the concluding part of the article, an interesting step for future research would therefore be to compare the results of the Danish case to similar service areas in countries with stronger cultural and social norms for providing social services outside public service organizations. Next, we discuss in more detail features of our two vignette experiments and the data collection process.

**Vignette Experiment 1: Self-Efficacy**

The first experiment is designed to manipulate respondents’ feeling of being self-efficacious in the context of helping elderly citizens in nursing homes. According to Bandura (1977) people’s self-efficacy may be enhanced through self-efficacy information or experiences. Since performance
feedback contain information regarding people’s knowledge and/or skills in relation to executing a
given task, it is reasonable to expect that performance feedback will influence respondents’
perceived self-efficacy. This has been confirmed in existing studies which have shown that people’s
feeling of self-efficacy can be induced through positive performance feedback on their knowledge
and/or skills in relation to a given task (Karl, O’Leary-Kelly and Martocchio 1993; Stone and Stone
1994; Crockett, Morrow and Muyschondt 2017; see also Mutz 2011 for some discussion of previous
feedback studies). In order to manipulate respondents’ feeling of being self-efficacious we first
asked respondents a set of four factual questions related to helping and caring for elderly people
(see Figure 1 for exact wording). Second, the respondents were randomized to one of two
conditions. In the first condition, respondents did not receive any performance feedback, but
continued to the next questionnaire item. In the second condition, irrespective of the number of
correct answers, respondents received positive performance feedback on their knowledge in relation
to assisting elderly at nursing homes via the following message: “Well done! The questions on the
previous page are very difficult for many Danes. Your score suggests that you have great
knowledge on aspects that are important when taking of elderly citizens at nursing homes as a
relative or as a volunteer”. Prior to the data collection, we tested the four factual questions and the
vignette on a convenience sample of 38 adults aged 21-67. Respondents raised issues that gave rise
to minor alterations to one of the four questions and the text vignette.

Table A1 in the appendix provides empirical validation of our experimental manipulation of
self-efficacy. Using a scale inspired by existing literature (Lassen and Serritzlew 2011; see
discussion of measurement below), subjects randomly assigned to the “positive performance
feedback” condition after answering the four factual questions on average report a 1.19 point higher score of self-efficacy on a scale ranging from 0 to 10 \((p < 0.001)\) than subjects assigned to the “no feedback” condition (see Model I). As we discuss later, our measure of self-efficacy contains items reflecting respondents’ belief in both their skills and knowledge to coproduce elderly care at nursing homes. The estimated effect corresponds to an effect size of 0.41 standard deviations, suggesting that our stimulus was highly effective in inducing higher levels of self-efficacy among respondents. We find similar results when we include the following covariates: gender, age, education, region and the number of correct answers on factual questions (see Model II). The results for the five covariates reveal that only gender (female = 1) is positive and statistically significantly correlated with the level of self-efficacy, while the correlations of other covariates are statistically insignificant at conventional levels (results not shown, but can be reproduced using the replication files [link to be inserted]).

**Vignette Experiment 2: Encouraging Coproduction Yielding Private or Collective Benefits**

In the second experiment, we designed a survey vignette encouraging citizens to participate in coproduction of elderly care. The exact wording of the vignette is reported in Figure 2. To improve the ecological validity of the vignette, we sought inspiration in actual strategic documents used by Danish municipalities in efforts to increase the number of citizens that volunteer. In the context of local government service delivery municipalities are the local political authority, and we therefore designated “the municipality” as the sender of the encouragement vignette. In the vignette, we mentioned the tasks that citizens could participate in (e.g., assisting at meals) to ensure that we kept task complexity constant across experimental groups. Moreover, we ensured that the tasks presented to citizens mirror tasks actually performed by volunteers and relatives in a Danish context. To manipulate whether participation in coproduction of services yields private or collective
benefits, we systematically referred to the subject’s role as either a relative or a volunteer. In the former case, the cue primes the subjects to think of the activities as something that has direct implications and value for a family member. In the latter, the subjects are primed to think of the activities as something that have implications and value for a wider group of individuals. In both vignettes we emphasized that the activities would likely help improve the quality of life among residents at the nursing home. We expect this to trigger a sense of obligation to coproduce in particular among subjects receiving the “relative” vignette.

[Figure 2]

Citizen Survey and Study Population

We contracted a consulting firm in Denmark, Userneeds, to distribute an electronic survey via e-mail among a subset of their citizen panel. Data was collected December 7-18 2017, and our survey included a total of 904 respondents. The vignettes along with a set of questions (see below) were embedded in the survey and presented to respondents in a fixed chronological order beginning with questions about the respondent’s background characteristics; next, the vignette experiment manipulating self-efficacy followed by questions measuring self-efficacy; and finally, the vignette experiment varying participation in coproduction of services yielding private and collective benefits followed by questions measuring psychological costs. We restricted the sample to citizens aged 40-64 years to ensure high mundane realism. Citizens in this age group are more likely to have parents aged 65 or older (retirement age in Denmark). In our study, almost 68 percent of the respondents have parents aged 65 or older, and 71 percent of the respondents confirm that they sometimes help (or have previously helped) a family member aged 65 years or older with different tasks. Gender, age, and geographic location of the respondents were used as strata to ensure that our sample is representative of the broader population of Danish citizens aged 40-64 years on these
characteristics. A precondition for interpreting the results as causal effects is that the randomization procedure has resulted in groups that are similar on average on potentially important confounders.

In Table 2, we present summary statistics across the four groups. Table 2 reveals one significant difference between the experimental groups at the 0.05-level (education) and one significant difference between the experimental groups at the 0.10-level (experience with helping relatives), whereas the other means are very similar.

[Table 2]

Outcome Measures

In this section, we outline how we operationalize our main outcome measures, self-efficacy and psychological costs. We rely on previously validated scales where possible.

**Self-efficacy.** Self-efficacy concerns the feelings of being capable of executing a given task (Bandura 1977). As discussed in the theoretical section, this may entail both belief in one’s skills and knowledge to execute a task. Inspired by Lassen and Serritzlew (2011) and their items measuring internal political self-efficacy, we used a four-item scale to measure subjects’ perception of being efficacious in coproducing elderly care services in a nursing home context. The items cover feelings of possessing the necessary skills (“I consider myself well qualified to help elderly citizens at nursing homes”) and knowledge (“I feel that I have a pretty good understanding of what it requires to help elderly citizens at nursing homes”). The full wording of items can be found in Table A2 in the appendix. All items were measured on a 5-point Likert scale ranging from “completely disagree” to “completely agree”. An exploratory factor analysis indicates that three of the four items perform well (factor loadings 0.70 or higher). The item “I think that many of the tasks that need to be performed to help elderly citizens at nursing homes are difficult to solve” did
not perform satisfactorily (factor loading of -0.26), and we therefore retained the three other items for further analyses. It is not uncommon for items phrased in opposite direction than the majority to perform poorly in factor analyses, but they might still serve an important function in helping to reduce response set. The three-item scale displays internal consistency with a Cronbach’s Alpha score of 0.85. We therefore created an additive scale simply adding the three items together, yielding equal weight to each of the items in the instrument. The index of self-efficacy ranges from 0 to 10, with a high value indicating a high level of self-efficacy.

**Psychological Costs.** As argued in the theoretical section, we focus on psychological costs in the form of stress, stigma, and feelings of (loss of) autonomy. In order to measure psychological costs, we developed 11 items inspired by existing scales (e.g., Basic Psychological Needs Scale; see, e.g., Deci and Ryan 2000) and a Danish study among relatives to elderly citizens (Ældresagen 2017). In the survey, the items measuring psychological costs were placed right after the coproduction experiment yielding private or collective benefits. The items were placed in two groups, and the order of items was randomized to account for potential order effects. Similar to self-efficacy, all items were measured on a 5-point Likert scale ranging from “completely disagree” to “completely agree”. Tables A3-A5 in the appendix report the full wording of the items as well as the results of exploratory factor analyses. Items display high factor loadings except for one item: “I see the request that citizens should help out at [name of fictitious nursing home; in our case: Oasen] as an interference with my right to plan my own time”. Retaining all other items, the three scales show high internal consistency with Cronbach’s Alpha scores of 0.76 for stress, 0.80 for stigma, and 0.75 for the three-item autonomy scale. On this basis, we created three additive indices ranging from 0-10, one for stress, one for stigma, and one for autonomy. All indices were computed by simply adding together the indicators of the latent construct, giving equal weight to each respective
Higher values on the scale can thus be interpreted as corresponding to stronger feelings of stress, stigma, and autonomy.\(^5\)

**Positive feelings.** While we propose that encouragement to participate in coproduction of public services producing private benefits for relatives/friends trigger psychological costs to a greater extent compared to coproduction of public services producing collective benefits for a wider group of people, it is also plausible that these very same tasks may trigger positive feelings such as pride and an increased quality of life among relatives or volunteers who participate in coproduction. To take into account that absence of burden is not the same as such positive feelings, we therefore measure whether the respondents experience positive feelings. Three items were developed for the purpose of our study. The wording of items is presented in Table A6 in the appendix. All three items on positive feelings reflect egoistic motivation in which a respondent participates in coproduction to improve their own welfare (e.g., increased quality of own life) as opposed to altruistic motivation in which a respondent participate in coproduction to improve the welfare of others (e.g., increased quality of life of a relative living). We chose to measure positive feelings by using items reflecting egoistic motivation as coproduction scholars have stressed the importance of egoistic motivation for participating in coproduction and volunteering (Alford 2002; 2009). However, we also acknowledge that a more nuanced measure of positive feelings would include items reflecting both egoistic and altruistic motivation for participating in coproduction. We will return to this issue in the conclusion of the article. All items on positive feelings were measured on a 5-point Likert scale ranging from “completely disagree” to “completely agree”. They were placed along with the 11 items on psychological costs. An exploratory factor analysis displays loadings between 0.79 and 0.83. Cronbach’s Alpha for the three items is 0.87, suggesting adequate internal consistency. Similar to the other latent constructs, we generated an additive scale giving equal
weight to each item. The index of positive feelings ranges from 0 to 10, with a high value indicating a high degree of positive feelings.

Table 3 presents descriptive statistics for our four dependent variables. As demonstrated by the distributions in Figure 3, the indices for all dependent variables are approximately normally distributed. Furthermore, all indices exhibit considerable variation, indicating that our respondents were able to provide nuanced responses to our items rather than just using the neutral response category. In the next section, we present our empirical results.

[Table 3]

[Figure 3]

**Empirical Findings**

We test the effect of our experimental treatments on each of the three measures of psychological costs as well as the positive feelings index. We estimate average treatment effects using OLS regression models. These models regress our dependent variables on dummy variables for our self-efficacy and service task treatments, respectively. To increase the precision of our treatment effects, we re-estimate all models adjusting for the following covariates: gender, age, education, region, number of correct answers on factual questions, and experience with helping relatives. Results for models with covariates are very similar to the main findings and can be found in the appendix, cf. Tables A7 and A8. Figure 4 summarizes the average treatment effect estimates for each of our vignette treatments unadjusted for covariates.

In the upper part of Figure 4, we report the average treatment effect of receiving the vignette encouraging citizens to participate in coproducing services that yield private benefits (“1”) against receiving the vignette encouraging citizens to participate in coproduction yielding collective
benefits (“0”). Focusing first on stigma, we find evidence of a positive and statistically significant effect. The result indicates that respondents are more likely to express experiences of stigma when they are encouraged to help as a relative at a nursing home in contrast to helping as a volunteer. The estimated average treatment effect corresponds to an effect size of approximately 0.40 of a standard deviation. Turning to stress, we find some evidence of a positive average treatment effect. However, the coefficient estimate is only statistically significant at the 0.10-level. In terms of effect size, the estimate is also fairly small (approximately 0.12 of a standard deviation). Looking at the results for autonomy, we see a negative and statistically significant effect. Consistent with our expectation, this suggests that respondents are less likely to express experiences of autonomy when they are encouraged to help as a relative compared to a scenario in which they are encouraged to help as a volunteer. The estimated effect corresponds to an effect size of approximately 0.31 of a standard deviation. Finally, we also test the effect of the experiment on the index for positive feelings, but find no statistically significant treatment effect.

In addition to testing for average treatment effects, we also test whether the effects are contingent on prior experience with helping relatives (e.g., a weaker effect for those with prior experience with helping relatives). We do not find any evidence of heterogeneous treatment effects in our main analysis (results not shown, but can be reproduced using the replication files). Taken together, our empirical analyses provide strong support for our first hypothesis stating that citizens are more likely to experience psychological costs when they are encouraged to participate in coproduction of services that yield private benefits for relatives or friends compared to coproduction of services that yield collective benefits for a wider group of people. One exception to our hypothesis, however, was the experience of stress, where results were only significant at the 0.10-level and small in terms of effect size.
Next, we estimate the average treatment effect of the self-efficacy inducement (1 “positive feedback”; 0 “no feedback”) on our dependent variables. Corroborating our expectation, a negative and statistically significant effect is revealed for stigma. This result indicates that subjects who received the self-efficacy inducement express experiences of stigma to a lesser extent compared to subjects who did not receive the self-efficacy inducement. The coefficient estimate corresponds to an effect of approximately 0.16 of a standard deviation. Similar to this finding, and consistent with our theoretical proposition, we also find a negative and statistically significant effect on stress. Subjects who received the self-efficacy inducement thus express experiences of stress to a lesser extent compared to subjects not receiving the self-efficacy inducement. This estimated effect size again corresponds to approximately 0.16 of a standard deviation and can be categorized as a small substantive effect. Directing our focus to autonomy, we find a positive and statistically significant effect of the self-efficacy inducement on our scale for autonomy which is consistent with our theoretical proposition. The estimated effect size is approximately 0.28 of a standard deviation, exceeding those observed for the other measures of psychological costs.

Finally, our results show a positive and statistically significant effect for subjects’ experiences of positive feelings. The effect size is comparable to the effects on stigma and stress, and suggests that self-efficacy in addition to mitigating psychological costs also induce positive emotions. To further test whether self-efficacy indeed matters to experiences of psychological costs we re-estimated our models with covariates (cf. Table A8) and added the self-efficacy scale used in the manipulation check. We find that adding the self-efficacy scale substantially weakens the effect of the self-efficacy treatment in all regressions as we would expect if the treatment induces self-efficacy. Furthermore, the self-efficacy scale is strongly correlated with the dependent variables in
three of four regressions. The effect sizes amount to 0.37 of a standard deviation reduction in stress, a 0.27 of a standard deviation increase in autonomy, and a 0.36 of a standard deviation increase in positive feelings for a one standard deviation increase in self-efficacy. Finally, the self-efficacy scale does not correlate significantly with stigma. One possible interpretation is that the positive feedback treatment in addition to inducing self-efficacy possibly also induces self-esteem more generally. This increase in self-esteem might then explain why we find a significant effect of the positive feedback treatment on stigma but no correlation between the self-efficacy scale and stigma. In sum, our empirical results lend strong and consistent support for Hypothesis 2. Citizens who feel more efficacious are less likely to experience psychological costs and more likely to experience positive feelings triggered from participation in coproduction. In the next section, we discuss our empirical results and provide suggestions for future research.

Discussion and Conclusion

Investigating under what circumstances citizens experience psychological costs in response to coproduction initiatives encouraging citizens to participate in coproduction of public services, our study offers three contributions to existing coproduction literature. Our first contribution is theoretical as we bring the concept of psychological costs from the administrative burden literature into the coproduction literature. Specifically, we argue–first–that there are potential downsides associated with coproduction initiatives encouraging citizens to participate in coproduction of services in the form of psychological costs, and–second–,that experiences of psychological costs in part depend on citizens’ self-efficacy. Consistent with our proposition, we show that (1) citizens who are encouraged to participate in coproduction of public services resulting in private benefits for a relative in contrast to coproduction of public services resulting in collective benefits for a larger group of people are more likely to experience psychological costs (i.e., less autonomy and higher
stress and stigma), and (2) citizens with low self-efficacy are more likely to experience psychological costs.

The second contribution is methodological and pertains to our development of a perceptual measure of psychological costs in a coproduction setting. To our knowledge, a perceptual measure of psychological costs in coproduction settings and citizen-state interactions more generally has yet to be developed, and we hope that the contextual measures of psychological costs developed in this article can serve as inspiration for future studies.

Finally, our findings contribute with practical implications for managers in central and local governments. Our results show that psychological costs should not be neglected or discounted when public service organizations seek to stimulate citizen participation in coproduction by attracting relatives and volunteers to invest their time and effort. Specifically, citizens may refrain from participating in coproduction if they experience psychological costs, and we find that experiences of costs are more likely to arise among individuals encouraged to participate in coproduction of services that yield private benefits for a relative. This is unfortunate as many instances of citizen participation in coproduction revolve around assisting someone with whom the citizen is personally and emotionally attached. We show this in the context of elderly care, but the scenario could easily be extended to services such as preschool, compulsory education, and care for disabled individuals, where both relatives and volunteers participate in coproduction and may solve similar tasks.

However, our results also show that individuals who feel self-efficacious about participating in coproduction of specific services are less likely to experience loss of autonomy, stigma, and stress. Psychological costs of participation in coproduction entailing private benefits may be possible to counteract with interventions aimed at increasing citizens’ self-efficacy. This could include sending out information materials to citizens on how to participate in coproduction and boosting citizens’ ability to participate in other ways, as in the studies by Jakobsen (2013) and
Thomsen and Jakobsen (2015). Another way to increase citizens’ self-efficacy may be to send information material to citizens illustrating that people similar to themselves succeed with producing the same task, drawing on what Bandura (1979) names “vicarious experiences”.

**Limitations and Generalizability**

Some issues arise when we consider the validity, application, and generalizability of our results. While vignette experiments hold many benefits, such as strong internal validity, they are not without their critics. One concern revolves around the mundane realism of vignettes (Gaines, Kuklinski, and Quirk 2007). To ensure high ecological validity of our study, we took two steps. First, we reviewed real-world strategic documents appearing on Danish municipalities’ webpages to inform our vignette. These documents outlined strategies for involving volunteers and relatives in the respective municipalities, and the vignettes therefore in many respects resemble real-world messages distributed by municipalities to its residents. Second, we restricted our sample to Danish citizens aged 40-64 years to increase the likelihood that respondents had one or more parent aged 65 or older (retirement age in Denmark). This was the case for almost 68 percent of our sample. Moreover, 71 percent of our sample confirmed that they help or have previously helped a relative with different tasks. These numbers reinforce the notion that helping an elderly relative was a realistic scenario for subjects to consider.

A third important concern regarding the vignette experiment is whether attitudes and intentions translate into actual behavior. For example, to what extent does the experience of stress, stigma, and loss of autonomy affect subsequent participation in actual coproduction? Evidence from other literatures suggest that individuals who experience feelings of stigma, stress, and loss of autonomy in their private or work life are more likely to engage in withdrawal behaviors such as burning out, being absent, and sticking to oneself (e.g., Gupta and Beehr 1979; Snyder, Omoto and
Crain 1999). Moreover, as found by Thoits and Hewitt, “people who have greater well-being invest more hours in volunteer service” (2001, 115). While this might foreshadow negative unintended consequences for getting members of the public to participate in and remain vested in coproduction, in particular services that yield private benefits, mapping these relationships is an important task for future research.

A final issue concerns how the findings of our study might travel to other types of coproduction settings, service areas, and national cultures. First, the theoretical argument advanced in this study pertains to cases of coproduction where the participant and beneficiary are different individuals (e.g., a relative helping a parent; parents reading with their child etc.). Yet, coproduction activities can also entail private benefits to the participant (e.g., when a patient works with health professionals to improve one’s own health). Second, one might ask whether psychological costs are likely to also arise for coproduction activities in other areas. In education, for example, we could imagine a fairly similar scenario: Parents are encouraged to read with their children at home yielding private benefits to someone they have a strong personal, and emotional attachment to, and thus feel a moral obligation to help, or be encouraged to volunteer as an aid for after-school activities in the local community. In this case, we would expect our argument to apply in similar ways. Parents are more likely to incur psychological costs of stress and stigma in the face of nonparticipation in tasks that critically advance the skills and wellbeing of their children, while the moral obligation to help will be less pronounced when benefits are more dispersed or target individuals with whom the parent does not feel a strong personal, and emotional attachment.

Third, and finally, we consider how the findings of this study might be contextualized or bound within specific cultural and geographic setting. Although volunteers and relatives assist with elderly care at many nursing homes in Denmark (FOA 2016), service tasks performed by volunteers and relatives often complement the tasks performed by professional nursing home staff. This means
that the professional staff performs the core activities of the organization while volunteers and relatives mainly perform peripheral tasks such as social gatherings with the elderly (Thomsen and Jensen 2019). In other countries with stronger traditions for involving relatives and volunteers in public service production, psychological costs of stigma and stress might be amplified if helping relatives living at nursing homes is considered more of a social norm. In these countries, experiences of psychological costs such as stigma and stress among relatives, compared to volunteers, could therefore be even more pronounced. While the nursing home context in a Danish setting can be regarded as a favorable case for our theoretical propositions, effects of similar – or perhaps even greater – magnitude might appear if the study is replicated in countries with stronger social norms and traditions for participation by relatives and volunteers in coproducing public services.

With this in mind, our results do hold some application beyond the Danish case of nursing home care. In many European and Asian countries, core services such as health, education and care are provided by local, state and national governments. Involving citizens as partners of public services delivery is not uncommon across these contexts, and our results therefore caution researchers and practitioners against psychological costs incurred by citizens in such interactions with the state as a possible blind spot of increasing citizen participation and improving public service provision. Yet, in other regions of the world such as among developing countries in Asia, Africa and Latin America individual families constitute the basis of elderly care rather than being a domain of public institutions. In these cases, our empirical setting would be anchored in civil societies and not be a case of coproduction. While we could imagine a similar mechanism whereby family members caring for elderly relatives would experience a stronger sense of moral obligation to cater to the elderly person’s needs (and thus incur stronger psychological responses in case of
failure to meet these needs), it lies beyond the scope of this article to assess the validity of our main claim in these contexts. We encourage scholars to take up this important task in future work.

**Directions for Future Research**

While our article has taken a first step to discuss psychological costs in coproduction, ample room remains for future research to advance our understanding of the origins and consequences of psychological costs in coproduction contexts. One important question that we are unable to answer and that should be tested in future research is whether and how the experience of psychological costs influences participation in actual coproduction. Although it is difficult to measure participation in actual coproduction in vignette experiments, future research might include a behavioral measure of coproduction by offering citizens the opportunity to sign up for actual coproduction initiatives (similar methods have been used in e.g., Moseley and Stoker 2015; Andersen and Moynihan 2016; Jilke et al. 2019) or to receive additional information about how to help elderly living at a nursing home. One could, for example, ask: “If you would like to receive information about how to help elderly living at a nursing home, please write you email address in the box”. This approach might also be helpful for converting insights offered in this article to practical recommendations for recruitment and retention efforts in coproduction arrangements. Volunteers and relatives might be recruited for coproduction initiatives (such as elderly care) through vignette-like ads on the basis of a sense of moral obligation to help. This is a double-edged sword as the perceived obligation might be the driver of recruitment in the first place, but simultaneously trigger negative emotional responses as shown in this article. While we show that the signaling of moral obligation matters for people’s psychological response, we are unable to delineate specific recommendations on how to craft such recruitment messages to reap the upsides while minimizing negative emotional responses. This is an avenue of research particularly well-
suited for emerging scholarship evaluating behavioral interventions and nudges in public management and administration research.

A second suggestion for future studies is to include items that reflect altruistic motivation for participating in coproduction (e.g., increased quality of life of a relative) in addition to items of positive feelings reflecting egoistic motivation. While the main purpose of our study is to examine unstudied downsides of participation in coproduction such as psychological costs, including additional items to measure positive feelings (and other types of costs) would make it possible to estimate each respondent’s cost-benefit gap. Related to this point, the emotional attachment of coproducers, and hence also the perceived benefits, is likely to be stronger in relation to care provided to relatives than care provided to strangers. To the extent that the benefits more than outweigh the costs, people may be more likely to coproduce even when psychological costs are higher. A fine-grained understanding of the perceived cost-benefit gap would therefore help us identify the circumstances under which people choose to engage in coproduction. An important part of this endeavor would also be to expand the types of psychological costs citizens might incur as part of coproduction initiatives. Studying a wider variety of emotional responses such as anxiety or emotional distress will allow researchers to more fully map the potential psychological costs of coproduction.

A third question to examine in future research is whether relatives and volunteers are more likely to incur psychological costs when assisting with certain types of tasks, such as helping with personal care compared to practical tasks. These and related questions are important for scholars to investigate in order (1) to advance our scientific understanding of the psychological costs of citizen participation in coproduction, and (2) to provide solid and empirically grounded recommendations to practitioners who wish to engage relatives and volunteers in coproduction.
Notes

1 In this article, the term “citizens” does not refer to citizenship as a legal status but is used—in line with prior research on coproduction—as a broad umbrella term to distinguish coproduction by non-state actors from that of government and public employees. In a coproduction setting, citizens may according to coproduction scholars act as service users, relatives of services users, volunteers or members of a community group etc.

2 The number of correct answers in the two groups was 2.20 and 2.24, respectively (two-tailed significance test of difference between the two groups was insignificant, p-value = 0.29).

3 The question: “What part of your body should you be careful not to exhaust when you are helping move an elderly person?” was replaced with “What is the recommended maximum weight, in kilogram, when you lift objects close to your body— for example, when you help an elderly person run daily errands?” In the feedback text, the word “extremely” was substituted for “very”. We deliberately chose not to induce negative self-efficacy for ethical reasons. This entails that our self-efficacy treatment is somewhat weaker than it would have been had we instead induced both positive and negative self-efficacy.

4 Userneeds has the largest online panel in Denmark with more than 92,000 active panelists. As is common for survey companies using online panels, Userneeds uses stratified sampling to ensure a sample which is representative of the overall population on background characteristics. In our case, strata were developed based on the gender, age, level of education, and geographical residence of panelists. Respondents from the Userneeds online panel were then included on a rolling basis to take part in the study. When a stratum had met its target, no more people were included from that stratum. Respondents could either access the survey on the Userneeds’ webpage or through an email invitation. For that reason, an exact response rate cannot be calculated. While the sample therefore is comparable to the population at large on socio-demographic characteristics, one
limitation of our sampling procedure—which is arguably a relevant concern in almost all survey research—is overrepresentation of people on unobserved variables such as interest in or knowledge about the topic. However, the overall dropout among respondents who accessed the survey is only 11 percent and since neither invited respondents nor respondents who accessed the survey through the webpage were told about the topic or purpose of the study beforehand, self-selection to the survey based on knowledge or interest is unlikely. In the sampling procedure, we aimed for 800 valid responses corresponding to an anticipated low effect size of 0.2 with a power of 0.8 and alpha of 0.05. We slightly oversampled to account for “don’t know” responses on the dependent variables.

5 In two robustness checks we use indices based on factors scores derived from either confirmatory factor analysis or principal factor analysis. These checks produce results very similar to those in the article. All robustness checks can be reproduced using the replication files.

6 Most of the covariates are insignificant in our models. However, in models with stigma as dependent variable, gender is positive and statistically significant (women are more likely to express experiences of stigma). In models with stress as the dependent variable, education is negative and statistically significant (respondents with a higher education are less likely to express experiences of stress) and in one of the models gender is positive and statistically significant (women are more likely to express experiences of stress). In models with autonomy as dependent variable, age is positive and statistically significant (older people are more likely to express experiences of autonomy). Finally, in models with positive feelings as dependent variable, gender is positive and statistically significant (women are more likely to express positive feelings) and experience with helping relatives is positive and statistically significant (those with prior experience with helping relatives are more likely to express positive feelings).
In addition to the main effects presented in Figure 4, we tested for interaction effects between self-efficacy and service tasks yielding different benefits on the four outcome measures. We did not find any significant interaction effects.

**Literature**


FOA. 2016. Frivilligt arbejde på FOA arbejdspadser. 


Jakobsen, Morten. 2013. Can government initiatives increase citizen coproduction? Results of a


Figures and Tables

[See attached .eps file. Legend for figure 1 is below.]

**Figure 1.** Vignette Experiment 1. Self-Efficacy. *Notes:* Question 1: “Is it important to be attentive to the blood sugar levels of an elderly person with diabetes?” [Yes; No]. Question 2: “Imagine an elderly person who does not eat much and is a little picky. He prefers white bread with fat and crispy fried onions. Which of the most important nutritional groups (carbohydrates, fat, protein) will he eventually be lacking?” [Carbohydrates; Fat; Protein]. Question 3: “Are you supposed to brush fake teeth with tooth paste?” [Yes; No]. Question 4: “What is the recommended maximum weight, in kilogram, when you lift objects close to your body— for example, when you help an elderly person run daily errands? [20, 30, 40, 50].
[See attached .eps file. Legend for figure 2 is below.]

**Figure 2.** Vignette Experiment 2. Private vs. Collective Benefit of Service Task
Table 1. Typology of Coproduction

<table>
<thead>
<tr>
<th>Inputs to coproduction</th>
<th>Individually enjoyed</th>
<th>Collectively enjoyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individually provided</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Private individual coproduction</td>
<td></td>
<td>Philanthropic individual coproduction</td>
</tr>
<tr>
<td>Collectively provided</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>Private collective coproduction</td>
<td></td>
<td>Philanthropic collective coproduction</td>
</tr>
</tbody>
</table>

Notes: Adapted from Bovaird et al. 2015.
Table 2. Balance Test between Treatment Groups

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive feedback?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Coproducing benefits for relatives?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>51.89</td>
<td>53.22</td>
<td>52.64</td>
<td>52.14</td>
<td>n.s.</td>
</tr>
<tr>
<td>Gender (female = 1)</td>
<td>0.48</td>
<td>0.51</td>
<td>0.46</td>
<td>0.54</td>
<td>n.s.</td>
</tr>
<tr>
<td>Education (higher education = 1)</td>
<td>0.34</td>
<td>0.25</td>
<td>0.25</td>
<td>0.36</td>
<td>*</td>
</tr>
<tr>
<td>Region (Zealand = 1)</td>
<td>0.45</td>
<td>0.47</td>
<td>0.45</td>
<td>0.44</td>
<td>n.s.</td>
</tr>
<tr>
<td>Number of correct answers (factual questions)</td>
<td>2.25</td>
<td>2.23</td>
<td>2.24</td>
<td>2.17</td>
<td>n.s.</td>
</tr>
<tr>
<td>Experience with helping relatives (Yes = 1)</td>
<td>0.65</td>
<td>0.76</td>
<td>0.71</td>
<td>0.72</td>
<td>+</td>
</tr>
</tbody>
</table>

Notes: Columns 1-4 report group means by treatment group. Column 5 reports results from F-tests of the treatment indicators being jointly zero. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$. N = 904.
Table 3. Descriptive Statistics: Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stigma</td>
<td>5.50</td>
<td>2.47</td>
<td>0</td>
<td>10</td>
<td>780</td>
</tr>
<tr>
<td>Stress</td>
<td>4.61</td>
<td>2.60</td>
<td>0</td>
<td>10</td>
<td>792</td>
</tr>
<tr>
<td>Autonomy</td>
<td>5.88</td>
<td>2.36</td>
<td>0</td>
<td>10</td>
<td>704</td>
</tr>
<tr>
<td>Positive feelings</td>
<td>5.98</td>
<td>2.32</td>
<td>0</td>
<td>10</td>
<td>745</td>
</tr>
</tbody>
</table>

Notes: Variation in number of respondents across indices is due to respondents choosing the “don’t know” option on at least one item included in the respective indices.
[See attached .eps file. Legend for figure 3 is below.]

**Figure 3.** Distributions of Dependent Variables. Histograms with Normal Density Curves
Figure 4. Average Treatment Effect of Service Task and Self-Efficacy Inducements on Psychological Costs Scales. Notes: The figure depicts the average treatment effect estimates of the coproduction task inducement (1 = private benefits; 0 = collective benefits) and the self-efficacy inducement (1 = positive feedback; 0 = no feedback) on psychological cost scales and index for positive feelings. Estimates are based on OLS regressions without covariates, reported in Tables A7 and A8.