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# Shaping resilience: how work team characteristics affect occupational commitment in health care interns during a pandemic

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## ABSTRACT

The covid-19 pandemic has strained organizational systems, with the health care field particularly affected given sudden surges of demand and changes of policy. The pandemic showcases the need to understand how social systems can be resilient to such external shocks. Drawing on 'joint production motivation' theory, this article offers a theoretical framework linking a social system's resilience with individual behavior. We examine a population strongly affected by the outbreak of the covid-19 pandemic: nursing students participating in internship programs before and during the crisis. Of the 141 nursing students in our sample, 23% opted to continue their internship. Four characteristics of work teams (collaborative contact, shared understanding, task interdependence, and collaborative organizational cultures) are hypothesized to explain students' continued occupational commitment during the crisis. Results from binomial logistic regression analyses show task interdependence and intrinsic motivation positively affect the decision for continued participation in internship programs during the pandemic.

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**KEYWORDS** Health care organizations; vocational education; covid-19; resilience; work team characteristics

## Introduction

The resilience of social systems, such as a country's health care sector, strongly depends on the willingness of its participants to keep contributing to the common good, particularly in times of external shocks. During the covid-19 pandemic, many accounts described health care workers showing commitment to their occupational duties, for instance by working overtime

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and risking their own health in potentially life-threatening situations (Chew *et al.* 2020). However, such solidarity among professionals should not be taken for granted, as there are also reports of health care workers refusing to work due to the pandemic (e.g. National Law Review 2020; NLTimes 2020). In the context of global crises and given the increase in risks and disasters of various nature (Cutter 2018; Van Bavel *et al.* 2020), it is of vital importance to understand how social systems can be made more resilient through the promotion of occupational commitment, and under which conditions an individual's commitment remains unchanged if circumstances suddenly deteriorate.

This study sheds light on the problem of social resilience in the health care sector by investigating the occupational commitment of nursing students participating in vocational internships before and during the covid-19 pandemic. Our target population was offered a choice either to stop participating in their internship program without repercussions on their vocational training or to continue working. Only 23% of students ( $n=141$ ) continued their internship. The choice to continue working indicates occupational commitment in a unique way, as students are not subject to formal requirements as in a labor contract.

Our main claim is that (dis-)continuation of the student's internship is mainly a function of specific collaborative organizational design principles present in the students' internship environments, being *collaborative contact*, *shared understanding*, *task interdependence* and *collaborative organizational culture*. Drawing on a framework developed in the field of organization science, we use 'joint production motivation theory' (Lindenberg and Foss 2011) to explain how the structure of a student's collaborative relations in an organizational environment keeps students committed to the organization. While many studies have looked at individual-level characteristics, such as intrinsic motivation (Rockmann and Ballinger 2017) or reward systems (Lee and Puranam 2017) to explain organizational commitment, our explanation adds to the understanding of professional commitment by emphasizing the importance of organizational, collaborative conditions. We argue that the more an individual's work environment strengthens the salience of joint production motivation through collaborative contact, task interdependence, shared understanding, and collaborative organizational culture, the more likely the system will be resilient against external shocks, such as those produced by the current pandemic.

The next section outlines the theoretical background. This is followed by a sketch of the research design, a presentation of the results, and a discussion.

## Theory

### *Joint production motivation and social resilience*

Joint production motivation entails an individual's willingness to collaborate with others to achieve a common goal (Lindenberg and Foss 2011). The concept of joint production motivation originated in management theory, as 'a special kind of motivation that is particularly geared to the fact that organizational members need to engage in collaborative activities such that organizations that tap into it would gain a performance advantage' (Lindenberg and Foss 2011: 500). While there are many factors that explain organizational performance, organizations with structural conditions that foster joint production motivation are expected to have superior performance, because its members are willing to forego individual needs to contribute to a common good. In addition, we argue that organizations with such structures will instigate higher levels of persistent commitment in the face of 'unknown' external threats, which in turn increases the general level of resilience of a cooperative system.

Resilience is an open-ended concept, as there are different potential threats to a social system (Norris *et al.* 2008; Miller *et al.* 2010). At the core of social resilience lies 'the capacity of individuals or groups to secure favorable outcomes [...] under new circumstances, and, if need be, by new means' (Hall and Lamont 2013: 13). As such, social resilience at least contains persistability, i.e. the amount of change and disturbances a system may endure without falling apart (Holling 2001). Only by persisting can other forms of resilience (e.g. adaptability and transformability) come forward (Matzenberger 2013). We conceive of a social system's resilience as its capacity to absorb disturbances despite external shocks while continuing to create value. This definition allows us to analyze the early responses to the covid-19 outbreak in the field of health care, where immediate action was required to deal with increasing demand and changing rules.

To understand how organizational conditions can incite joint production motivation in individuals, it is necessary to briefly introduce its underlying cognitive goal-framing theory (Lindenberg 2001, 2008), which explains how individuals' personal conceptions of appropriate goal-seeking behavior is affected by contexts. Goal-framing theory constitutes the backbone of joint production motivation (Foss and Lindenberg 2011), as it details how an individual's perception of a situation leads to different forms of behavior, either aimed at achieving individual goals, or at benefitting a social group (Lindenberg and Steg 2013). Briefly, goal-framing theory is a cognitive social theory positing that individuals perceive situations through

overarching goal-frames. These goal-frames guide individual behavior by defining perception of what goals are appropriate to pursue. Goal-frames are particularly powerful cognitive tools, working as ‘salient overarching goal[s] that dominate an individual’s mindset in a given situation’ (Arana and Wittek 2016: 767). There are three overarching goal-frames: hedonic, gain, and normative goal-frames (Lindenberg and Steg 2013).

When an individual perceives a situation through a hedonic goal frame, their cognitive emphasis is on the immediate fulfillment of their personal needs. In such situations, it is possible and appropriate to ‘do as one pleases’, without thinking about the future or the consequences on other people. Alternatively, the gain goal-frame is still an individualistic mindset, but one focused on the future. Action is oriented towards gaining an advantage, not immediately, but later in time. Many individual actions are performed within this frame, for instance, investing in study programs or maintaining a healthy diet. Finally, the normative goal-frame emphasizes to ‘act appropriately’. For example, where solidarity norms are salient, this implies forgoing the possibility to realize personal benefits in order to improve the well-being of others, or to avoid harming them. Whichever one of these three goal-frames is salient for an individual at a given moment is an innately social phenomenon (Keizer *et al.* 2008). Goal-frames are ‘contagious’, as individuals imitate the behavior of others (Aarts *et al.* 2004).

Goal-framing theory explicitly explains how cooperation can or cannot be maintained under changing external circumstances, because it incorporates an account of the interplay of goal-frames. First, the overarching goal-frames have different levels of a-priori salience: without situational nudges, individuals default to the hedonic goal-frame, while the normative goal-frame is the most brittle and in need to be constantly strengthened through situational cues (Keizer *et al.* 2008). Secondly, while one goal-frame will always be most salient, the other goal-frames are still active in the background. For the normative goal-frame, this means it can be strengthened if individual goals align with common goals, and falter quickly if goals conflict (Lindenberg 2008).

Analytically, joint production motivation explains when individual goal-frames overlap or strengthen the achievement of organizational goals because they motivate individuals to work towards the organization’s interests (Lindenberg and Foss 2011). In goal-framing terms, individuals will be most strongly motivated to contribute to joint production when they achieve joint goals, and when their individual rewards do not incite too much competition within work-teams.

### ***Adapting joint production motivation to healthcare education settings***

In its original formulation, four antecedents are supposed to instigate joint production motivation in employees: team and task interdependence, cognitive and symbolic management, recognition-based reward structures, and knowledge-based authority design (Lindenberg and Foss 2011: 504). As our investigation deals with different actors (students instead of employees) in different contexts (vocational socialization instead of regular work-place settings), we adapt the theory of joint production motivation to reflect these differences. Settings of vocational socialization differ from regular organizational settings in two ways: first, in these internship programs, reward systems are much less pronounced than they would be in regular work-place settings. While the original theory details how to make sure individual incentives are aligned with corporate goals, interns do not receive monetary rewards for their labor and work for a (pass or fail) grade at the end of their internship. This means the third antecedent of joint production motivation (recognition-based reward structures) is less relevant for student internship settings. Second, students participate in internship programs to learn and, consequently, are more dependent on colleagues than regular employees would be. This means the agency of students is lower, while also making the dependence of students on others in the organization higher than standard work-place settings. The small role of agency in student internships diminishes the impact of knowledge-based authority design on a student's willingness to collaborate.

To still paint a full picture of work team characteristics that may affect the joint production motivation of students, we focus on the two more relevant antecedents: team and task interdependence, and cognitive and symbolic management. We divide team and task interdependence into two separate aspects, being *collaborative contact* and *task interdependence*. By doing so, we cover both the relational structure of a work team (with whom people can work), and the content of such collaborative relations (how interrelated the cooperation within these relations is). The presence of symbolic management is divided into *shared understanding* and a *perceived collaborative organizational culture*, with the former covering cognitive aspects shared between individuals, while the latter deals with more general perceived norms within the workplace.

*Collaborative contact.* Joint production motivation depends on the 'jointness' of a team endeavor. The structural necessity for such jointness

is exposure to different kinds of individuals with distinct professional roles who cooperate in a work team. Contact with other colleagues and students may increase a student's awareness of potential collaborators, with this knowledge leading to a student feeling more knowledgeable and capable. Particularly in internship environments, students are motivated to learn more in situations where their working social capital increases (D'Eon 2004; Bridges *et al.* 2011). Borrowing from the network concept of structural embeddedness, we believe students who are better connected within their organizations will both receive more social cues as to what is appropriate behavior, and will experience more social control towards showing that behavior (Allen and Shanock 2013). Hence, the perceived presence of other colleagues on the work floor will strengthen the salience of the normative goal frame.

*Task interdependence.* Lindenberg and Foss describe the 'perceived functional links towards joint production' (2011: 502) as an essential antecedent of joint production motivation. This means not only that individual tasks in a work team need to be interdependent, where everyone's behavior contributes to the common goal, but also team members consciously perceive this interdependence. In vocational learning environments, we expect students to be more motivated when they realize their contribution to the common good (Runhaar *et al.* 2016). However, a difference with profit-driven collaborative relations is that students are in a more dependent position and therefore the effects of dependence on others will affect joint production motivation to a lesser extent. Nevertheless, we expect students who perceive their role in achieving common goals as larger to be more motivated to contribute to such goals, while students who believe they cannot contribute anyway will be much less inclined to do so.

Symbolic management works through two different paths. *Shared understanding* refers to the fact that joint production motivation requires clear and common goals in an organizational team (Runhaar *et al.* 2014), as this allows individuals to understand and consequently cooperate toward goals. Shared understanding occurs on both a group-level (Septer 2017) and a dyadic level (Beugelsdijk *et al.* 2009), where individuals co-construct the meaning of their cooperative relation. In a learning environment, we believe students are socialized into understanding what the goals and functions of other individuals are (Bleakley 2013), and therefore we envision this shared understanding to be an essential aspect of a student's joint production motivation. As goal-framing theory predicts that relational signaling is a very strong mechanism

through which normative goal-frames can be strengthened or undermined (Lindenberg 2003), we expect that dyadic understanding between students and colleagues is an essential avenue through which joint production motivation can be instigated.

*Collaborative organizational culture* is the fourth work team characteristic we investigate, and the second element of the presence of symbolic management in a work team. In addition to the structural mechanisms that may predict joint production motivation, there is also a cultural aspect to cooperation within work teams (López *et al.* 2004; Ancelovici 2013). Srivastava and Banaji (2011) show that individuals who perceive their organizational culture as collaborative internalize the norm for cooperation, and there is evidence for a similar process occurring with students in vocational training programs (Pollard 2008). Building, again, on the assumption that that (normative) goal-frames are contagious (Aarts *et al.* 2004), we expect perceived collaborative organizational cultures to positively affect students' joint production motivation. Here, we argue that students may internalize norms of cooperation through the perception of other individuals behaving normatively, even if this does not necessarily reflect the way in which these students perceive their own working relations (Hindriks 2019).

Although this study is aimed at investigating how work team characteristics may instigate joint production motivation and in turn affect the resilience of a social system, intrinsic motivation cannot be ruled out as an explanation of individual commitment to professional roles. Extant work has shown more intrinsically motivated students are consistently more willing and able to attain particular educational goals (for a review, see Taylor *et al.* 2014). As our research question deals with work team characteristics, which we expect to instigate a joint kind of motivation in interns, it is pivotal to ensure that what we are investigating is not simply intrinsic motivation. While there are theoretical overlaps between intrinsic motivation and joint production motivation, goal-framing theory offers a useful distinction: while the former still remains an intra-individual reasoning to want to pursue a particular goal, joint production motivation occurs when the normative frame is more salient in an individual (Lindenberg and Foss 2011). To show the distinct benefit of measuring joint production motivation, we thus include intrinsic motivation as a control variable in our analysis.

## Materials and methods

We test our hypothesis about the effects of four characteristics of work teams that incite joint production motivation in interns and whether



they predict the decision to continue with the internship in a sample of nursing students ( $n=141$ ) who participated in vocational internships in health care organizations in the Northern Netherlands. The selected group of students are uniquely situated for researching how the covid-19 crisis has impacted joint production motivation, as during this time-frame the students had to decide whether they wanted to continue or stop their internship. The students were initially contacted and agreed to participate in a three-wave survey-based panel study that follows them through their internship program. The original survey contained 24 questions and was administered between the 2nd and 15th of March 2020. The response rate was 62%. Of 182 received responses, 41 contained invalid data. Therefore, our final  $n$  is 141. Immediately after completion of Wave 1, the students' programs were disrupted due to precautionary measures for covid-19. After a week of having to remain at home, schools and health care organizations agreed that the decision whether or not to continue their internship program must be left to the discretion of the students. A student's decision to continue or discontinue the internship (without any repercussions with regards to educational progress and results) is this study's outcome variable (measured dichotomously (0=quit, 1=continued)).

Our survey was designed to elicit ego-network data from our participants, to gauge with whom the students collaborated in their internships and how they perceived these relationships. We asked students to map their own collaborative networks by listing at most five other students and five professional collaborators with whom the student had worked with during their internship. We divide *collaborative contact* into two parts: collaborative connections with other interns and collaborative connections with professionals in the organizations. For both, we include the count of reported alters as a proxy for how tightly connected a student was in their internship. For both counts, the survey allowed a maximum of five names.

*Task interdependence.* For each reported alter, students were asked to rate how strongly that person was dependent on the student's work. Their answers could range from 'not important at all' to 'very important'. We measure task interdependence by taking the mean level of reported task dependence across all collaborative partners.

*Shared understanding.* For each reported alter, students were asked on a 5-point scale how strongly they felt they understood what the other did in their daily work, from 'not at all' to 'very strongly'. As our measurement of shared understanding, we then calculated each student's mean level of reported understanding across all reported collaborative partners.

*Collaborative organizational culture.* We measure perceived organizational culture by asking students how cooperative they experience their environments. The questionnaire contains two items ('In my internship organization, colleagues from different professions cooperate with one another smoothly', and '...I see employees enjoy daily lunches together'), on a 5-point Likert scale, of which we calculated the average.

*Intrinsic motivation.* In order to distinguish the concept of joint production motivation from intrinsic motivation, we include a scale of intrinsic motivation, using Ryan and Connell's intrinsic motivation scale (1989). It consists of nine 5-point items (e.g. 'I am doing my best at my internship because I enjoy doing it', or '... I want to understand the subject'). Cronbach's  $\alpha=0.86$ , indicating the scale is reliable.

## Results

### *Descriptive results*

Table 1 shows descriptive results for our dependent and independent variables. Out of the 141 surveyed interns, 32 decided to continue their internships (23%), with more than three quarters (77%) of students making the decision to stop. For our independent variables, students on average named approximately 4 other students with whom they cooperated, and around 3.5 other colleagues. Given that students were asked to report at most five persons in each category, we believe these means show most students indeed find themselves part of a collaborative working environment. In those environments, students report an average shared understanding of 3.5 on a five-point scale, while task dependence has a lower mean score of 2.0. These findings indicate that students do report to have gained quite some knowledge of the professional work of those around them, while perceiving their own contribution to the collaborative effort as weaker. The collaborative organizational culture averages a score of 3.76, and the control variable of intrinsic motivation has a mean of 3.56. Bivariate correlation scores indicate that the number of students and colleagues have different relations with levels of shared understanding of task interdependence: the number of colleagues that students report significantly correlates with mean shared understanding, collaborative culture, and intrinsic motivation, while these bivariate relations are not present for the number of students who are named as collaborators.

**Table 1.** Descriptive results ( $n=141$ ) and Pearson's  $r$  bivariate correlation coefficients.

	Mean	SD	Min	Max	1	2	3	4	5	6	7
Continuation	0.23	-	0	1	1.00	.044	.074	.163 <sup>a</sup>	.033	.154	.216 <sup>**</sup>
Collaborative student contact	3.95	1.66	0	5		1.00	.136	-.086	-.195 <sup>*</sup>	-.131	-.039
Collaborative colleague contact	3.55	1.66	0	5			1.00	.049	.240 <sup>**</sup>	.264 <sup>**</sup>	.219 <sup>**</sup>
Mean task interdependence	2.00	0.78	1	5				1.00	.172 <sup>*</sup>	-.001	.060
Mean shared understanding	3.52	0.78	1	5					1.00	.242 <sup>***</sup>	.399 <sup>***</sup>
Collaborative culture	3.76	0.85	1	5						1.00	.318 <sup>***</sup>
Intrinsic motivation	3.56	0.65	1	4.89							1.00

Note: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ , <sup>a</sup> $p < 0.1$ .

### Binomial logistic regression results

To assess the effects of joint production motivation on students' decisions to continue or leave their internship, we perform a binomial logistic regression analysis, as our dependent variable is dichotomous. The reported logit-coefficients are the change of the predicted log-odds of a student continuing their internships. Additionally, we report the Average Marginal Effect for our independent variables, which approximate the predicted change in the probability of internship continuation with each 1-point step in the independent variable (Williams 2020). We present two models, the first including only the joint production motivation predictors, and the second including our control variable, intrinsic motivation (Table 2).

Model 1 includes five predictors referring to the four joint production motivation variables. Of those five, the two predictors pertaining to collaborative contact do not significantly alter the log odds of continuing the internship, nor does the shared understanding students report. The other two variables, mean task interdependence and organizational culture, have a positive and significant effect on the predicted odds of internship continuation. Model 2 adds a control variable for intrinsic motivation. The variable added to the model significantly predicts the odds of a student continuing their internship. By exponentiating the predicted coefficient (0.939), we find a score of 2.56. This means that with every increase of 1 point on the motivation scale, the log-odds of a student continuing their internship increases by 2.56. The AME indicates a more tangible value: with each 1-step increase, the likelihood of internship continuation is predicted to increase by 15.2%. By including a measure of intrinsic motivation, the effect of organizational culture decreases to a score that is only marginally significant, with the other variables remaining insignificant. However, mean task interdependence continues to have a positive and significant effect on the log-odds of internship continuation. When we exponentiate the coefficient (0.591) of mean task interdependence, our

**Table 2.** Binomial logistic regression results with Average Marginal Effects and logit-coefficients.

	AME	Model 1 Estimate	Std error	AME	Model 2 Estimate	Std error
Collaborative student contact	0.023	0.136	0.144	0.025	0.154	0.154
Collaborative colleague contact	-0.005	-0.028	0.152	-0.013	-0.085	0.158
Mean task interdependence	0.092	0.543	0.275*	0.096	0.591	0.290*
Mean shared understanding	-0.008	-0.047	0.296	-0.045	-0.277	0.313
Collaborative culture	0.100	0.586	0.299*	0.089	0.546	0.323 <sup>a</sup>
Intrinsic motivation				0.152	0.939	0.406*
Intercept		-1.261	0.225***		-1.359	0.244***
AIC		146.28			142.29	

Note: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ , <sup>a</sup> $p < 0.1$ .

model predicts a 1-point increase on the average perceived task interdependence leading to a 1.81 increase in the likelihood of a student continuing their internship. In AME terms, we find each 1-point increase of task interdependence, increases the predicted probability of a student continuing their internship with 9.6%.

## Conclusion

In this article, we conceive of the covid-19 crisis as an unanticipated external shock testing a social system's capacity for social resilience. We expected that systems geared towards joint production motivation would be more persistent. We argue those organizational structures that make joint production motivation more salient in individuals foster occupational commitment, and, in turn, a stronger social resilience. To develop the argument empirically, we extend joint production motivation theory to learning environments, using goal-framing theory to develop antecedents particular to vocational internship contexts.

Our main claim is that occupational commitment of students in vocational internship programs is mainly a function of specific collaborative organizational design principles present in their learning environments. During the covid-19 pandemic, precautionary measures were installed, and students were presented with the choice to (dis-)continue their internships. We consider the decision to continue cooperating in these situations as an indicator of occupational commitment.

Our findings indicate team task interdependence and intrinsic motivation positively affect the odds of occupational commitment in students. Other theorized predictors of joint production motivation, *shared understanding* and *collaborative contact*, had insignificant effects, though there are hints that more positive *collaborative organizational cultures* may increase the odds of students' internship continuation during a crisis. Altogether, our findings seem to suggest that the field of health care would benefit most from internship programs that stress students' additional contribution to the common good, while also suggesting the frame of cooperation within organizations is an important cognitive factor for generating joint production motivation.

A major limitation of this study is caused by its small sample size, which precluded a more fine-grained analysis of the interplay between individual motivation and joint production motivation. While we include intrinsic motivation as a control variable, it could be argued that it rather acts as a moderator: the salient of the normative goal-frame may be stronger for intrinsically

motivated students. The sample size of the present study unfortunately does not allow for more complex models including moderating variables.

Additionally, we did not assess the effects of potential feedback loops that may occur when groups of individuals influence one another in their decision-making, with joint production motivation potentially plummeting once some individuals start showcasing more selfish behavior (cf. Arana and Wittek 2016). Lastly, our research is limited by its focus on the ‘internal’ networks of students in their internship environments, while student’s decision-making also is affected by more external social relations, such as friends and families. Future research is needed to both analyze the interplay between such social spheres, while also assessing how both networks, both internal and external to organizations, shape the perceived dangers and norms that are present in dire situations of external shocks. Conceiving of organizational systems as interacting individuals, whose joint production motivation is contagious, boosting the motivation of other members of the organization, may help explain why, when facing an external shock like the covid 19 pandemic, some organizational units in the health care sector have shown more persistent commitment and resilience than others.

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