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RESEARCH ARTICLE

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Whose autonomy support is more effective? Managers' or Co-Workers'? An experimental comparison of source and occupational context on intrinsic motivation

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Abstract

The purpose of this paper was to experimentally test whether support from different sources would lead to increased intrinsic work motivation and to examine whether occupational context moderated this effect. In Study 1, we manipulated autonomy support, source of behaviour, and occupational context. In Study 2, we allocated participants to a conventional or social work context depending on their real occupation to increase ecological validity. Altogether, 495 workers participated. We found a main effect for autonomy support, and that managers' autonomy support was more effective in a conventional occupational context, whereas co-workers' autonomy support was more effective in the social occupational context. Findings highlight the importance of having both autonomy-supportive managers and co-workers for workers' intrinsic motivation.

KEYWORDS

autonomy support, co-worker support, occupational contexts, manager support, work motivation

Résumé

L'objectif de cet article était de tester expérimentalement si le soutien à l'autonomie provenant de différentes sources permettait d'accroitre la motivation intrinsèque au travail et d'examiner si le contexte professionnel avait un effet modérateur sur cette relation. Dans l'étude 1, le soutien à l'autonomie, la source du comportement de soutien et le contexte professionnel ont été manipulés. Dans l'étude 2, les participants ont été attribué à un contexte de travail conventionnel ou social en fonction de leur profession réelle pour augmenter la validité écologique du devis. Au total, 495 travailleurs ont participé. Les analyses ont révélé un effet principal du soutien à l'autonomie sur la

motivation intrinsèque. De plus, le soutien à l'autonomie des gestionnaires était plus efficace dans un contexte de travail conventionnel, tandis que le soutien à l'autonomie des collègues était plus efficace dans le contexte de travail social. Les résultats soulignent l'importance d'avoir à la fois des gestionnaires et des collègues soutenant l'autonomie afin de favoriser la motivation intrinsèque des travailleurs.

MOTS-CLÉS
contextes professionnels, soutien à l'autonomie, soutien des gestionnaires, soutien des collègues,

JEL CLASSIFICATION
M5

1 | INTRODUCTION

Motivated employees are crucial for organizational success. It is therefore no surprise that many leadership and motivation theories provide suggestions regarding how managers should behave to improve and support their employees' motivation and performance (see for instance Gagné & Deci, 2005; Gagné & Vansteenkiste, 2013; Kehr, 2004; Locke & Latham, 2002, 2019; Spangler, Tikhomirov, Sotak, & Palrecha, 2014). However, there is little agreement in the literature regarding which of these managerial behaviours have the most impact. While some researchers emphasize behaviours focused solely on competence and goal setting (Locke & Latham, 2002, 2019), others focus on autonomy-supportive behaviours as being the most important (Deci & Ryan, 2000; Gagné & Deci, 2005). Autonomy support is characterized by the encouragement of free choices, personal initiative, and support of people's competence in a climate of relatedness (Deci et al., 2001). Many studies show that autonomy-supportive behaviours are effective in increasing autonomous types of motivation and basic need satisfaction across different contexts such as sports and prosocial behaviour (Deci & Ryan, 2008a, 2008b; Gagné, 2003). A meta-analysis showed that the satisfaction of basic psychological needs, which autonomy support enhances, leads to higher performance at work (Cerasoli, Nicklin, & Nassrelgrgawi, 2016). Another meta-analysis reported significant associations between basic needs and indicators of well-being, job attitudes, job behaviours, and motivation (Van den Broeck, Ferris, Chang, & Rosen, 2016). Regarding motivation, the satisfaction of the need for autonomy and competence was negatively and significantly associated with external motivation, whereas each basic need had positive significant associations with introjected, identified, and intrinsic motivation. Further information on the different types of motivation is given down below.

So far, existing research has focused on the role of managerial support in facilitating employee motivation. Only a few studies have examined the effect of autonomy support from colleagues on autonomous types of motivation in organizations (Jungert et al., 2013, 2018). However, neither of those studies have considered the occupational context as a potential moderator, nor did they compare the effectiveness of managerial with collegial autonomy support in an experimental design. Thus, the present research aimed to test the causal link between autonomy support from managers and from co-workers on intrinsic motivation; compare which source of autonomy support is more effective; and examine whether the occupational context moderates the effectiveness of managers' and co-workers' autonomy support. In two experimental online studies, we investigated whether there would be differential effects of autonomy support from managers compared to autonomy support from co-workers on intrinsic motivation, in both a conventional and a social occupational context.

2 | THEORETICAL FRAMEWORK

2.1 | Autonomy support

This study was grounded in self-determination theory (SDT; Deci & Ryan, 2000; Gagné & Deci, 2005), a macro theory of motivation that qualitatively defines different types of motivational regulations along a continuum of autonomy (or self-determination) from autonomous to controlled motivation. Autonomously motivated behaviour is based on a sense of choice and personal volition, whereas controlled behaviour originates from internal or external pressures. Autonomous types of motivation are associated with positive employee outcomes such as performance, satisfaction, trust, and well-being, whereas

controlled types of motivation are associated with negative outcomes, such as decreased vitality and persistence (Kasser & Ryan, 1999), feeling pressured, coerced (Deci & Ryan, 2008a), and ego-depleted (Moller, Deci, & Ryan, 2006). A means of fostering autonomous motivation is autonomy support. Being autonomy-supportive means considering another person's perspective and providing opportunities for choice and self-initiation (Baard, Deci, & Ryan, 2004). The opposite of autonomy support is controlling behaviour, which is coercive, pressuring, or authoritarian (Deci & Ryan, 2000). More specifically, autonomy support includes a number of essential conditions, such as providing meaningful rationale for demands, acknowledging the other person's feelings, using non-controlling language, offering choices, and taking the other person's perspective. In an occupational context, autonomy-supportive leadership is associated with autonomous motivation and several other positive employee outcomes (Gillet, Gagné, Sauvagère, & Fouquereau, 2013; Otis & Pelletier, 2005; Richer & Vallerand, 1995; Stone, Deci, & Ryan, 2009). Autonomy-supportive managers have been shown to promote employee engagement and performance (Baard et al., 2004), need satisfaction and well-being (Deci et al., 2001), and civic virtue (Güntert, 2015) across different industries and cultures. Moreover, managerial autonomy support has been linked to increased trust in the organization, higher work satisfaction and engagement, decreased stress, and acceptance of organizational change (Baard et al., 2004; Deci, Connell, & Ryan, 1989; Deci & Ryan, 2000; Deci, et al., 2001). In contrast, research shows that controlling behaviours from managers who thwart autonomy have negative psychological consequences for subordinates, such as more dissatisfaction at work (Deci & Ryan, 2000).

2.2 | Intrinsic motivation

The prototype of autonomous motivation is intrinsic motivation (i.e., doing an activity for its own sake). However, SDT also different types of extrinsic motivation (i.e., doing something to achieve an outcome), which can be autonomous or controlled. *Intrinsic* motivation represents the most autonomous type of motivation. *Integrated* (doing something because it fits with one's value system), and *identified* regulation (doing something because it is personally meaningful) are two extrinsic but autonomous types of motivational regulations. In contrast, *introjected* (doing something to avoid feeling unworthy or to prove one's worth) and *external* regulations (doing something to receive external rewards or to avoid punishment) are extrinsic types of motivation, which constitute the category of controlled motivation.

Among these different types of motivation, intrinsic motivation has received the most attention with regard to positive outcomes across various contexts. For example, in a school context, Taylor et al. (2014) pointed to the particular importance of intrinsic motivation in predicting academic achievement using meta-analytical methods.

Intrinsic motivation also seems relevant in explaining support for charitable causes. For example, Schattke, Ferguson, and Paulin (2018) showed in three studies that intrinsic motivation for stimulation explained the link between identification with a charitable cause and its subsequent support. Although extrinsic types of motivation also played a role, intrinsic motivation was the most consistent mediator/predictor. In an occupational context, Rawolle Wallis et al. (2016) also pointed to the mediating potential of intrinsic motivation, as it explained the relation between executives' congruence between implicit and explicit motives and burnout. Hence, executives with higher congruence (who had better access to their true self) were more intrinsically motivated at work and consequently had lower levels of burnout.

Finally, Kuvaas, Buch, Weibel, Dysvik, and Nerstad (2017) showed in a series of studies that intrinsic motivation positively predicted work performance and affective organizational commitment. Moreover, it negatively predicted continuance commitment, turnover intention, burnout, and work–family conflict. In contrast, the authors reported that extrinsic motivation was unrelated or negatively related to the positive outcomes but positively related to the negative outcomes.

Notably, one of the most robust findings in the literature is the association between autonomy support and intrinsic motivation (Cheon, Reeve, Lee, & Lee, 2015; Gagné & Deci, 2005; Gagné et al., 2015; Pelletier, Séguin-Lévesque, & Legault, 2002). A recent meta-analytic review confirms these findings by showing that the provision of autonomy-supportive practices was positively and increasingly more strongly associated with more internalized forms of motivation (Slemp, Kern, Patrick, & Ryan, 2018). Furthermore, autonomy support from leaders was most strongly associated with intrinsic motivation. It has been associated with many important work outcomes, including increased work satisfaction, creativity, persistence, learning, task performance, more effective coping, lower turnover intentions, and less emotional exhaustion (Gillet et al., 2013; Grant & Berry, 2011; Otis & Pelletier, 2005; Richer, Blanchard, & Vallerand, 2002; Ryan & Deci, 2000).

Besides autonomy support (Gagné & Deci, 2005), the literature provides suggestions from different theoretical points of view about how to increase intrinsic motivation (see for instance Kruglanski et al., 2018; Locke & Schattke, 2019; Quirin, Tops, & Kuhl, 2019; Kehr, Strasser, & Paulus, 2018). However, all approaches focus primarily on managers, as they do play a role of great

social importance: they are responsible for socializing and developing their subordinates, including fostering their intrinsic motivation and optimal functioning. However, what role do co-workers play in supporting intrinsic motivation?

2.3 | The impact of Co-Workers on their colleagues

Moreau and Mageau (2012) found that autonomy support from colleagues predicted health professionals' work satisfaction and psychological health. Moreover, Jungert et al. (2013) found that Swedish health care workers perceived higher autonomy support from their co-workers than from their managers. However, managers' and co-workers' autonomy support both predicted autonomous work motivation and self-efficacy. Interestingly, for autonomous motivation, the effect size was larger for managers' than for co-workers' autonomy support. The opposite was true for self-efficacy. Importantly, managers' and co-workers' autonomy support each explained some unique variance in autonomous work motivation and self-efficacy. Thus, beside managers, co-workers seem to also play a non-negligible role in enhancing their fellow co-workers' autonomous motivation. Yet causal conclusions cannot be drawn from Jungert et al. (2013).

More recently, Jungert et al. (2018) examined the impact of peer autonomy support training in work teams. This intervention study examined whether two half-day moderated and three self-conducted feedback training sessions over a period of seven weeks would increase basic need satisfaction and in turn autonomous motivation in the banking and property industry in Northern Europe. The authors compared the intervention group to a control group that received no intervention. Indeed, the results indicated that peer autonomy support positively affected both basic need satisfaction and autonomous motivation. However, the authors mentioned that they did not find any mean differences but merely different developmental trends over the different time points. Thus, even with this intervention study, one should be careful with causal conclusions. In addition, the study did not allow for the comparison of the causal effects of managers with those of co-workers.

Thus, an experimental test of the causal relationship of co-workers' autonomy support on intrinsic motivation, the most autonomous form of work motivation, is still pending, as is a direct comparison to managers' causal effects. Therefore, the question arises regarding whose autonomy support is more effective, managers' or co-workers'. Further, is one source of autonomy support always more effective than the other one or does it depend on the context, specifically occupational context?

2.4 | Occupational contexts

Previous research has used Holland's (1997) taxonomy of occupational contexts to classify different categories of occupations (see for instance Golle et al., 2018; Thielgen, Krumm, Rauschenbach, & Hertel, 2015). This taxonomy designates people in terms of their vocational interests, competencies, and values. Holland distinguishes six major categories to classify jobs: Realistic (for instance, roofer), Investigative (for instance, engineer), Artistic (see for instance, graphic designer), Social (see for instance, server), Enterprising (see for instance, bank assistant), and Conventional (see for instance, office clerk). Each category requires different levels of involvement with people, data, and equipment (Gottfredson, 1980, 1999; Viernstein, 1972). We explain the two relevant categories in more detail in the next paragraphs.

A *conventional occupational context* fosters conformity and clerical competencies, management of records, and written material. In this context, viewing the world in conventional ways is rewarded (Gottfredson, 1980, 1999; Holland, 1997). It may also be characterized by formal roles, compensations based on a monthly salary, and communication that is mostly top-down, such as performance appraisals given from a manager to a clerk (Frink & Klimoski, 1998). Clear status differentiation between managers and clerks, formal social norms, and highly regulated, ordered, and controlled ways of communicating between workers further characterize a conventional work environment (Kelley et al., 2003). A typical example would be a classical office setting in an administrative agency.

In contrast, in a *social occupational context*, interpersonal competencies and social values are important (for instance, being inclined to work with others and take advantage of close intellectual or physical relationships) and are rewarded in those settings (Gottfredson, 1980, 1999; Holland, 1997). An example would be working as a server in a restaurant. In such a context, the server's accountability is characterized by performance appraisals. Compensations have a horizontal nature as both appraisals and compensations tend to come from customers and other servers. Thus, most of the information goes from customers and co-workers to the server. In addition, restaurants are part of the hospitality industry, where informal staff communication is common (King & Choi, 1999), but where employee turnover rates are especially high (Powell & Wood, 1999). Thus, an

important distinction between the two contexts is that the conventional occupational context is characterized by more hierarchical relationships whereas the social occupational context is characterized by more peer or non-hierarchical relationships.

Job design and organizational structures are becoming more socially embedded, with teamwork and network structures becoming more prevalent (Parker, 2014). Thus, a conventional occupational context today might be more social and involve more social exchanges than it used to. In line with the view of social exchange theorists (Cropanzano & Mitchell, 2005), task interdependence would seemingly be present in both a conventional occupational and in a social occupational context where cooperation among coworkers is emphasized (Mueller & Kamdar, 2011; Staples & Webster, 2008). However, these two occupational contexts still typically differ in terms of formality, communication, and performance appraisals. Given these differences between the two types of contexts, it could be hypothesized that the significance of managers' and co-workers' autonomy support (or autonomy thwarting, respectively) should differ. More precisely, we expect that in a conventional occupational context the impact of autonomy support on intrinsic motivation will be higher if it comes from managers than from co-workers. This should be the case because employees in this context are used to more vertical communication and performance appraisals (i.e., from management). We expect the opposite pattern in a social occupational context because employees are more used to horizontal communication and performance appraisals (i.e., from co-workers). To our knowledge, no other research to date has examined whether occupational context matters for the impact of managers' versus co-workers' autonomy support (i.e., the source of autonomy support).

2.5 | Present research

We investigated three research questions. First, previous research had been conducted in the field, the designs were correlational and an intervention, respectively, and took place in Northern Europe (Jungert et al., 2013, 2018). Thus, could we replicate the causal link between co-workers' autonomy support on intrinsic motivation using a different methodology (i.e., experimental online vignette studies) and in a different cultural setting (i.e., with employees from North America)? Second, whose autonomy support is more effective to increase intrinsic motivation, the manager's or the co-worker's? Third, does the manager's and the co-worker's effectiveness depends on the occupational context?

To answer these research questions, we conducted two vignette studies. The vignettes described a typical work scene in which we asked participants to imagine they worked in the situation described. The vignette then described how another person (a manager or co-worker) asked the participant to do some work-related things. These were either described in an autonomy-supportive or an autonomy-thwarting way. Subsequently, we asked participants how intrinsically motivated they would feel in the described work setting. In Study 1, participants were randomly assigned to either an office setting (conventional occupational setting) or a restaurant setting (social occupational context). In Study 2, we assigned participants to the restaurant or the office vignette depending on whether their own real occupational context was more conventional or social; that is, we matched participants with the setting they were used to in their actual job.

Given the evidence in the literature that autonomy support has a positive impact on intrinsic motivation, we expected to find a main effect of autonomy support on intrinsic motivation, independent of its source.

Hypothesis 1 *All participants in an autonomy-supportive condition will report higher intrinsic motivation than participants in any autonomy-thwarting condition (main effect of autonomy support).*

Given that a social occupational context consists of many interactions between employees and their co-workers while a conventional occupational context puts more emphasis on interactions between employees and their manager, we hypothesized that the type of occupational context would moderate the effects of managers' versus co-workers' autonomy support. Of course, restaurants can vary in the extent of interpersonal competencies and on how much employees' social values are rewarded, and offices can vary in their degree of conformity and the importance of records and written material. However, in this study, the restaurant context was described in a clearly social manner, while the office context was described in a clearly conventional way (see vignettes in Appendix A).

Hypothesis 2 *Participants in the conventional occupational setting will have higher intrinsic motivation if the autonomy support (vs. thwarting) comes from the manager than from the co-worker (three-way interaction).*

Hypothesis 3 *Participants in the social occupational setting will have higher intrinsic motivation if the autonomy support (vs. thwarting) comes from the co-worker than from the manager (three-way interaction).*

3 | STUDY 1

To test our three hypotheses, we conducted an experimental vignette study using a 2 × 2 × 2 between subjects factorial design. We manipulated the interpersonal style (autonomy support vs. autonomy thwarting); the source of behaviour (manager vs. co-worker); and the occupational context (conventional vs. social). We chose an office setting for the conventional occupational context and a restaurant setting for the social occupational context because we assumed that most people would have a basic idea about those work settings. Moreover, it was relatively easy to describe an office setting in a typical conventional context and a restaurant setting in a very social way, following Holland's (1997) criteria. As a dependent variable, participants rated how much intrinsic work motivation they would have in the described situation.

4 | METHOD

4.1 | Participants and selection criteria.

Sample 1 was composed of 335 participants (169 males; mean age $M = 31.93$, $SD = 11.92$) recruited through Amazon Mechanical Turk (AMT) and working in North America (Canada and the US). AMT is an online contract labour portal (i.e., crowdsourcing) that has participant pools for the purposes of collecting survey data for behavioural research. Workers can browse available tasks and are paid upon successful completion of each task. Research has found that the use of labour portals such as AMT is an efficient and appropriate way to recruit full-time workers (Buhrmester, Talaifar, & Gosling, 2018; Mason & Suri, 2012). One important advantage of using a labour portal such as AMT in this study is that the participants are likely to have more relevant work experience in career-oriented jobs than university students. Moreover, several studies found that data collected with AMT met or exceeded psychometric standards compared to student samples (Buhrmester et al., 2018).

To ensure data quality in both samples, we measured participants' reaction times and used comprehension questions about the content of the vignettes. We removed participants who spent less than 10 s reading their vignette from the initial samples. We also removed participants who were unable to successfully answer the comprehension questions about the vignettes' content. Participants received US$0.15 according to the AMT terms in exchange for their participation. Participants were randomly assigned to the different experimental conditions, which resulted in 38 to 46 participants in each of the eight conditions.

4.2 | Stimuli

We used eight vignettes, varying the interpersonal style (autonomy support vs. thwarting), source of behaviour (manager vs. co-worker), and occupational context (office vs. restaurant). We asked participants to imagine that everything in the vignette was happening to them. In line with King, Murray, Salomon, and Tandon (2004), the vignettes were "geared to encourage respondents to think the person described is someone just like themselves" (p. 194).

In the *social occupational context condition*, vignettes described a restaurant environment, in which the protagonist, a server, was working with either a manager or a co-worker, who had been working in the restaurant for a couple of months. The participants were asked to imagine that they were the server working in the restaurant and that everything in the vignette happened to them. In the first condition, the manager was highly autonomy supportive in several specific situations, for example stating "I know you are busy" (taking the employee's perspective) "but a very important guest will come in five minutes and I need someone to serve her" (providing a meaningful rationale). "Would you prefer waiting more other tables or taking this guest on?" (use of non-controlling language and provision of choices). In the second condition, the word "manager" was replaced by the word "co-worker." The co-worker was still autonomy supportive. In the third condition, the manager was very controlling in the same situations in which they had been autonomy supportive in the previous vignettes. Examples of statements include, "A very important guest will come in five minutes whom you have to serve, and you must be extra service-minded with this guest" (neither providing a meaningful rationale nor offering a choice, and using controlling language). In the fourth condition, the controlling manager was replaced by a controlling co-worker in the restaurant context.

In the *conventional occupational context condition*, vignettes described an office environment. The participants were asked to imagine that they were working for a company in an ordinary office, using a computer, and that everything in the vignette happened to them. In these vignettes, the described office clerk was working with a manager or a co-worker, respectively, who had been working in the office for several months. In the fifth condition, the manager was highly autonomy supportive in three specific instances. In the sixth condition, the word "manager" was replaced by the word "co-worker"

in the autonomy-supportive situations. In the seventh condition, the manager made controlling remarks to the office worker in the same instances in which they had been autonomy supportive in the previous vignettes. Finally, in the eighth condition, the controlling manager was replaced by a controlling co-worker.

An example of autonomy support through perspective-taking is "I know you're busy, but your client at X &Y called before you came in," whereas "I cannot go to the 2 pm meeting because I have to go to headquarters" is an example of providing a meaningful rationale. "Do you think you could go? You could talk about the new project if you feel like it" is an example of the use of non-controlling language and of the provision of choices. An example of controlling behaviour is "you have to go to the 2 pm meeting. And you must tell them about my ideas regarding the new project," which exemplifies the lack meaningful rational and choice as well as the use of controlling language. The vignettes were each about 160 words long (see Appendix A for the full vignettes).

There are several reasons why vignettes are preferable over a standard questionnaire or interview. First, the respondent is less likely to let decisions be biased by impression management. Second, most people are not always aware of their considerations, while this method requires them to make considerations consciously (Alexander & Becker, 1978). The systematic use of vignettes enables researchers to distinguish among the different occupational contexts of the situation. Thus, using vignettes has the advantage of allowing for greater control over variables and the examination of motivation (Karasawa, 1995), which facilitates the implementation of an experimental design.

4.3 | Dependent variable

Immediately after the participants had read the vignette, they were asked to complete a short questionnaire that measured intrinsic work motivation presented on a seven-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The introduction for the items was "Following the experience described in the short story, please estimate the extent to which you would have the following feelings or thoughts about your work in the restaurant/office." We used the three items from the Motivation at Work Scale (MAWS; Gagné et al., 2015) that measure intrinsic motivation: "this job is fun"; "this job is interesting"; "this job is exciting". The internal consistency coefficient between items was $\alpha = 0.88$. We also asked participants to indicate their gender, age, and if they had ever worked in a restaurant or an office, respectively, and how long ago in years.

4.4 | Comprehension questions

To verify whether the participants had carefully read and understood the vignettes, we asked comprehension questions about the vignettes. These consisted of two questions about the content of the vignette that the participants answered at the end of the survey. The first question asked how many people were working in the office/restaurant in the vignette and the second one was related to what the co-worker/manager had said in their first comment in the vignette. We removed 28 participants who did not answer the questions correctly to assert high validity.

5 | RESULTS

The data were analyzed in the statistical software IBM SPSS 26.0.

Intrinsic motivation was unrelated to gender and age. However, people who had previously worked in the setting of the vignette had slightly higher intrinsic motivation values of (r = -0.12, $p < 0.05$).

To test our three hypotheses, we calculated a three-way ANOVA with intrinsic motivation as dependent variable and interpersonal style (autonomy support vs. thwarting), source of support (manager vs. co-worker), and the occupational context (conventional vs. social) as between subject factors. We found a significant main effect for interpersonal style, $F(1, 327) = 49.51$, $p < 0.001$, $\eta 2 = 0.13$. Overall, participants in the autonomy-support condition reported higher intrinsic motivation ($M = 4.13$, SD = 1.22) than those in the autonomy-thwarting condition (M = 3.15, SD = 1.33). This supports Hypothesis 1. In contrast, we did not find a main effect for the source of support, F (1, 327) = 1.30, p = 0.26, $\eta 2$ = 0.004, as the overall means for managers (M. = 3.58, SD. = 1.45) and co-workers (M = 3.73, SD = 1.28) were comparable and did not differ significantly. Unexpectedly, the occupational context also yielded a main effect, F (1,327) = 6.61, $p = 0.01$, $\eta^2 = 0.02$. Participants reported higher intrinsic motivation in the conventional context (M = 3.84, SD = 1.42) than in the social occupational context ($M = 3.46$, SD = 1.27).

Furthermore, we found that none of the two-way interactions were significant: interpersonal style × occupational context, F (1, 327) = 2.93, $p = 0.088$, $\eta 2 = 0.01$; source of support × occupational context, F (1, 327) = 0.06, p = 0.81, $\eta 2$ = 0.000; interpersonal style × source of support, F (1, 327) = 0.11, $p = 0.73$, $\eta 2 = 0.000$. However, and most importantly, the three-way interaction was significant, $F(1, 327) = 4.14$, $p = 0.04$, $\eta^2 = 0.01$.

Figure 1 shows the means for intrinsic motivation as a function of interpersonal style, source of support, and

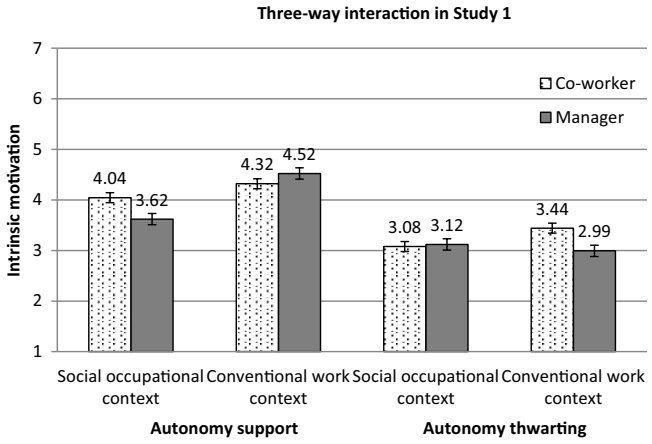

FIGURE 1 Means for intrinsic motivation as a function of interpersonal style, source of behaviour, and work context

occupational context. Two observations are striking. First, in all autonomy-support conditions, the means were higher than in the autonomy-thwarting conditions, as indicated by the significant main effect. Second, focusing on the autonomy-support condition only, the impact of managers and co-workers depended on the context. More precisely, in the office setting (conventional occupational context), autonomy support from the manager led to higher intrinsic motivation than autonomy support from the co-worker, which supports Hypothesis 2. Conversely, in the restaurant setting (social occupational context), autonomy support from the co-worker led to higher intrinsic motivation than autonomy support from the manager. This supports Hypothesis 3. A follow-up ANOVA that only examined the autonomy-supportive conditions confirmed that the interaction between the source of autonomy support and the occupational context was significant, $F\ (1,\ 167) = 3.01$, $p = 0.04$, $\eta 2 = 0.02$. Table 1 shows the means and standard deviations for each cell.

6 | STUDY 1 DISCUSSION

The results support our hypotheses that autonomy support generally increases intrinsic motivation, whether it comes from managers or co-workers; that managers' autonomy support is more effective in a conventional occupational context (office setting); and that co-workers' autonomy support is more effective in a social occupational context (restaurant setting). The experimental design of this study allows us to conclude the following: autonomy support from both managers and from co-workers leads to higher intrinsic motivation; and the context moderates the relative effectiveness of managers' and co-workers' autonomy support. However, the principal problem with vignettes is that they might not fully reflect actual experience, as people react to an imagined scenario. Therefore, we aimed to address this problem in Study 2.

7 | STUDY 2

The goals of Study 2 were to replicate the findings from the first study and to augment the ecological validity of the vignette study approach. Ecological validity refers to the degree the materials and setting of the study reflects the real-world that is being examined (Brewer, 2000). Therefore, we manipulated the interpersonal style (autonomy support vs. thwarting) and the source of support (manager vs. co-worker) as in Study 1. However, contrary to Study 1, we assigned participants who worked in conventional occupational contexts to the office vignette and participants who worked in social occupational contexts to the restaurant vignette. We assumed that workers in a more conventional occupational setting would identify more closely with the office vignette, while participants with a social occupational job would identify more closely with the restaurant vignette. Thus, Study 2 also used a $2 \times 2 \times 2$ between-subjects factorial design, in which two factors were experimental (i.e., interpersonal style and source of support), whereas the third one was quasi-experimental (i.e., occupational context). Again, participants rated their amount of intrinsic work motivation in the described situation as a dependent variable.

8 | METHOD

Participants were $N = 164$ workers. As in Study 1, we used comprehension questions (see Study 1), which all participants were able to successfully answer. Prior to assigning the participants to a condition, they were asked to indicate in what context they worked. The options were "working with customers such as a server or with clients such as a nurse" (i.e., people oriented), "working with information processing such as a programmer or financial worker," "working with things such as a manufacturer (i.e., non-people oriented), and "other." Sixty-three participants had a social occupation in real life and were assigned to the restaurant vignette, 97 participants with a conventional occupation received the office vignette, while four participants fell into the "other" category, and did not receive any vignette, resulting in a total of $N = 160$ participants (84 males; mean age $M = 30.36$, $SD = 11.51$). In the next step, we assigned the participants randomly to the

TABLE 1 Descriptive statistics and correlations between all measures

Variables	*M(SD)*	1	2	3	4
1. Gender	1.50 (0.50)	-	0.14*	−0.04	−0.02
2. Age in years	31.93 (11.92)	-	-	−0.25**	0.09
3. Worked in this context before	1.37 (0.48)	-	-	-	−0.12*
4. Intrinsic motivation	3.65 (1.36)	-	-	-	-

Note: $N = 335$. Gender: 1 = male, 2 = female; worked in this context: 1 = yes, 2 = no.
*$p < 0.05$ **$p < 0.01$.

TABLE 2 Means and standard deviations for all cells of the different conditions

***Interpersonal style*:**		**Autonomy supportive**	**Autonomy thwarting**	**Total**
Vignette	***Source of behaviour***	***M(SD)***	***M(SD)***	***M(SD)***
Social occupational context	Manager	3.62 (1.17)	3.11 (1.33)	3.38 (1.27)
	Co-worker	4.04 (1.05)	3.08 (1.30)	3.53 (1.28)
	Total	3.82 (1.13)	3.10 (1.31)	3.46 (1.27)
Conventional work context	Manager	4.52 (1.30)	2.99 (1.48)	3.78 (1.58)
	Co-worker	4.32 (1.17)	3.44 (1.19)	3.91 (1.25)
	Total	4.42 (1.23)	3.21 (1.35)	3.84 (1.42)
Total	Manager	4.08 (1.31)	3.05 (1.40)	3.58 (1.45)
	Co-worker	4.19 (1.12)	3.25 (1.25)	3.73 (1.28)
	Total	4.13 (1.22)	3.15 (1.33)	3.65 (1.36)

autonomy-supportive versus autonomy-thwarting conditions or the manager versus co-worker conditions.

The procedure, the vignettes, the dependent variable, and the comprehension questions were the same as in Study 1. Again, we asked participants to imagine that everything in the vignette was happening to them. Subsequently, they answered the three intrinsic motivation items and the comprehension questions. Although the items measuring intrinsic work motivation were identical to those in Study 1, the scale was this time ranging from 1 to 5; a five-point scale seemed more user-friendly in the online questionnaire tool we used for Study 2. The internal consistency of the intrinsic motivation scale was good ($\alpha = 0.94$).

9 | RESULTS

The data were analyzed in the statistical software IBM SPSS 26.0.

Table 2 depicts the descriptive results indicating that intrinsic motivation was weakly related to gender but not to age. Women tended to have higher intrinsic motivation than men.

To test our hypotheses, we conducted a three-factor ANOVA with intrinsic motivation as the dependent variable. The three between-subjects factors were interpersonal style (autonomy support vs. thwarting), source of support (manager vs. co-worker), and occupational context (conventional vs. social). We found a significant main effect for interpersonal style, F (1, 159) = 118.75, $p < 0.001$, $\eta 2 = 0.44$. Participants in the autonomy-support condition reported higher intrinsic motivation ($M = 3.50$, SD = 0.97) than those in the autonomy-thwarting condition ($M = 1.89$, SD = 0.83). We found no mean difference (managers $M = 3.49$, SD = 1.01; co-workers $M = 3.50$, SD = 0.94) for source of support, F (1, 159) = 0.03, $p = 0.874$, $\eta 2 = 0.000$ or for occupational context, F (1, 159) = 0.51, $p = 0.478$, $\eta 2 = 0.003$ ($M = 3.50$, SD = 1.00; $M = 3.49$, SD = 0.95).

We found no significant two-way interactions for interpersonal style with source of support, F (1,159) = 0.02, $p = 0.878$, $\eta 2 = 0.000$, interpersonal style with occupational context, F (1, 159) = 0.99, $p < 0.321$, $\eta 2 = 0.006$, and sources of support with occupational context, F (1, 159) = 0.56, $p < 0.455$, $\eta 2 = 0.004$. However, as in Study 1, the three-way interaction was significant, F (1, 159) = 6.17, $p < 0.05$, $\eta^2 = 0.039$.

Figure 2 depicts the mean differences. It shows the means for intrinsic motivation as a function of interpersonal style, source of support, and occupational context. First, in all autonomy-support conditions, the means

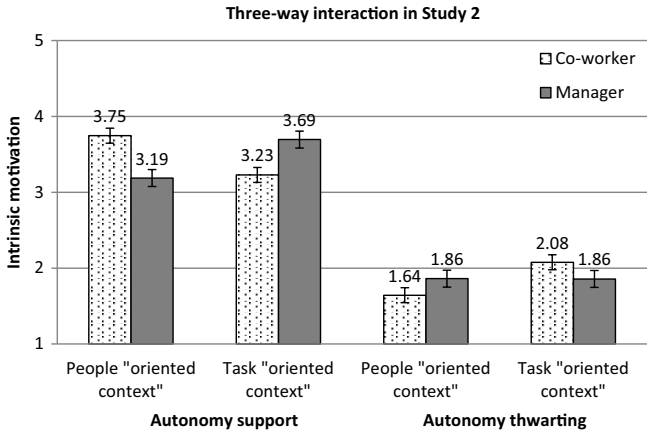

FIGURE 2 Means for intrinsic motivation as a function of interpersonal style, source of behaviour, and work Context

TABLE 3 Descriptive statistics and correlations between all measures

Variables	*M(SD)*	1	2	3
1. Gender	1.48 (0.50)	-	−0.07	0.16*
2. Age in years	30.36 (11.51)	-	-	−0.03
3. Intrinsic motivation	2.69 (1.21)	-	-	-

were higher than in the autonomy-thwarting conditions, as indicated by the significant main effect.

Second, focusing on the autonomy-support conditions, the impact of the co-worker and the manager, respectively, depended on occupational context. More precisely, in the social occupational context, autonomy support from the co-worker resulted in more intrinsic motivation than when support came from the manager. Conversely, in the conventional occupational context, autonomy support from the manager was more effective than support from a co-worker. Table 3 shows the means and standard deviations for each cell.

10 | STUDY 2 DISCUSSION

The above results replicate the findings from Study 1 with a different sample. Moreover, they take the participants' actual work experiences into account rather than solely relying on the vignette technique. This increases the ecological validity of the findings. Furthermore, the results confirm that the fit between the source of support and the occupational context can make autonomy support even more effective than it already is. In comparison, autonomy support versus thwarting explained 44% of the variance in intrinsic work motivation in this study. Moreover, taking the conventional versus social occupational context into account explains another 4% of the variance.

11 | GENERAL DISCUSSION

The present investigation sought to examine the relative impact of managers' and co-workers' provision of autonomy support as a function of occupational context. First, the present findings showed that autonomy-supportive interpersonal behaviours, irrespective of whether they came from a manager or a co-worker, resulted in higher intrinsic motivation than controlling behaviour. In other words, when managers or co-workers behave in a coercive, pressuring or authoritarian way to impose a specific and defined way of thinking and behaving upon workers, it will decrease their colleagues' intrinsic motivation. This suggests that managers as well as co-workers should focus on taking the colleagues' perspective, encouraging choice and self-regulation, and decrease their reliance on extrinsic demands and pressures to foster intrinsic motivation (see Deci et al., 1989). Thus, the results of the presented studies are the first to confirm the causal relation between autonomy support from both managers and co-workers on intrinsic motivation.

The finding that autonomy support from co-workers can be equally effective as support from managers might be particularly relevant for research on shared leadership (Pearce & Barkus, 2004), with the team member with the best knowledge, skills, or abilities for a given task will take the lead on that particular task rather than the nominal leader. Shared leadership is associated with more innovative behaviour and is facilitated through vertical transformational leadership (Hoch, 2013). Interestingly, Wang and Gagné (2013) see transformational leadership as an autonomy-supportive behaviour. These authors showed that transformational leadership positively predicts autonomous motivation. At the same time, Carson, Tesluk, and Marrone (2007) showed that "shared purpose" and "social support," both autonomy-supportive behaviours, predicted shared leadership. Thus, the common factor that fosters autonomous motivation and performance in vertical and shared leadership seems to be autonomy-supportive behaviour from nominal leaders as well as from peer leaders. However, whose autonomy support is more effective?

The present research is also the first to show that the effectiveness of vertical (i.e., manager) and horizontal (i.e., co-worker) autonomy support depend on occupational context. That is, autonomy support from co-workers increased intrinsic motivation more than support from managers in a social occupational context, whereas the reverse was true in the conventional occupational context. So far, research on autonomy support has typically shown that autonomy support is always beneficial (Slemp et al., 2018; Van den Broeck et al., 2016), which our results suggest as well. In addition, however, our results

suggest that the fit between the source of support and the occupational context can explain additional variance on top of the general effect. Thus, future research and interventions should carefully evaluate who provides the autonomy support in a given context, a peer or a superordinate.

Despite our new findings about autonomy source and occupational context, we would like to highlight that even in a non-fitting context, autonomy support is much better for intrinsic motivation than controlling behaviour. Unfortunately, the current research does not permit us to answer the question of how autonomy support and autonomy thwarting would affect intrinsic motivation relative to a neutral behaviour that is neither autonomy supportive nor controlling. Future research should investigate this question: is it enough to not be controlling or do co-workers and managers have to be autonomy supportive to foster intrinsic motivation and how much more would autonomy support add to intrinsic motivation compared to neutral non-controlling behaviour? The answer should be of practical interest for interventions in organizations.

Our results do have implications for organizational development. First, having autonomy-supportive managers and co-workers has positive effects on intrinsic work motivation, which in turn should increase job performance (Moran, Diefendorff, Kim, & Liu, 2012), increase effective coping (Julien, Senécal, & Guay, 2009), lower turnover intentions (Williams et al., 2014), and increase work satisfaction (Gillet et al., 2013). Furthermore, our findings show that co-workers play an important role as well.

Second, our findings underline that interventions in organization should include managers and co-workers to promote autonomy support. In social occupational contexts, characterized by interpersonal competencies, social values, and peer or non-hierarchical relationships, managers should focus more on functioning as a model of autonomy-supportive behaviour to their subordinates so that they will then adopt the behaviour with their co-workers. Co-workers should be aware of their own impact on their colleagues and their work environment. In conventional occupational settings characterized by formal social norms, highly regulated and controlled means of communication between workers, and more hierarchical relationships, managers can also function as role models of autonomy support but should not forget that subordinates might expect more direct leadership from them, which should be autonomy supportive.

The present study has certain limitations. Using vignettes rather than workers in their real occupational context reduces the external validity of this study. On the other hand, the experimental design allows for causal explanations and thus leads to a high internal validity, something that was missing in previous studies on that matter (Jungert et al., 2013, 2018; Moreau & Mageau, 2012). Even if vignettes might only produce stated rather than actual behaviours, vignette studies show a degree of uniformity and control over the stimulus situation similar to what is achieved using experimental designs in the laboratory (Bateson, Reibstein, & Boudling, 1987) and are invaluable in social research (Hughes & Huby, 2012).

Another limitation is that participants completed an online questionnaire in a hypothetical context, while our research questions focus on interpersonal relationships. However, work experience was an inclusion criteria for participating. Furthermore, to mitigate the somewhat artificial character of vignette studies, and to counter potential biases of Study 1, where it is possible that some participants have experience from working in an office or in a restaurant while others do not, we allocated participants in Study 2 to the work setting that fit their own actual occupational context best to increase their identification with the scenario. Moreover, Study 2 replicated the findings of Study 1 almost exactly. In addition, both studies replicated previous findings in the field (Jungert et al., 2013, 2018) using a different methodology, a different design, and a different cultural setting. Thus, we could consider the present research a replication with variation, which some have called for as a means of theory building (Locke, 2015) and to counteract the alleged replication crisis (Stroebe & Strack, 2014).

One could argue that participants perceived the restaurant setting as more fun and exciting than the office setting, which could have been confounded with the operational definition of intrinsic motivation. Firstly, the participants reported higher intrinsic motivation in the conventional office setting than in the social restaurant setting in Study 1. And there was no difference in Study 2. Secondly, the important result of this study is the three-way interaction, and not the main effect or the two-way interactions. Likewise, it could be argued that the two occupational contexts would differ on some characteristics that could result in confounds. However, the two occupational contexts were described in ways to make them as comparable as possible, with the employees working during the day, with similar status, and for organizations of similar size in both vignettes.

12 | CONCLUSION

This research confirms earlier findings that autonomy support fosters intrinsic work motivation. Importantly, it contributes two new findings to the literature. First,

autonomy support in an occupational context is beneficial for intrinsic motivation, whether it comes from a manager or a co-worker. Second, autonomy support from co-workers seems to be of extra value in a social occupational context, whereas it seems to be of additional importance when it comes from a manager in a conventional occupational context. Autonomy support is clearly important, but it seems to matter who is the source of the support and in what context one works. Consequently, managers and co-workers should treat their colleagues in an autonomy-supportive way to increase intrinsic work motivation.

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APPENDIX

Vignette 1

Please imagine that you have been working as a server in a small, popular Italian restaurant for a couple of months. It is noon on a Friday, the restaurant is busy and you work with your manager and a co-worker, who both started in the restaurant at about the same time as you. Your manager (co-worker) tells you "I know you are busy, but a very important guest will come in five minutes and I need someone to serve her. Would you prefer waiting more other tables or taking this guest on?" Later, you head for a table with a group of business people who just came in, when your manager (co-worker) asks you "Would you mind if I take that table? One of them is my cousin. If it is okay, you could serve Table D." At 2 pm, you ask your manager (co-worker) if you could make a change in your work schedule for next week. Your manager (co-worker) says "I will ask around to see if anyone can switch days with you."

Vignette 2

Please imagine that you have been working as a server in a small popular Italian restaurant for a couple of months. Today, it is noon on a Friday, the restaurant is busy and you work with your manager and a co-worker, who both started in the restaurant at about the same time as you did. Your manager (co-worker) tells you "A very important guest will come in five minutes whom you have to serve and you must be extra service-minded with this guest." Later, you head for a table with a group of business people who just came in, when your manager (co-worker) says to you, "Sorry, but I'll take that table. You will have to take Table D instead." At 2 pm, you tell your manager (co-worker) that you would like to change your work schedule for next week. Your manager (co-worker) says, "Sorry, but all of us must stick to their schedules. That's the way it is here."

Vignette 3

Please imagine that you have been working in an office at a company for a couple of months. It is Tuesday morning and you have come in early; only you, your manager and a co-worker are in. All of you started at the company at about the same time. You are working at your computer when your manager (co-worker) says, "I know you're busy, but your client at X&Y called before you came in. It would be great if you could call them. Another thing, I cannot go to the 2 pm meeting because I have to go to headquarters. Do you think you could go? You could talk about the new project if you feel like it." Your manager (co-worker) leaves and you continue working at your computer. Later, as you are having a coffee, you tell your manager (co-worker) about your suggestions concerning a specific client. Your manager (co-worker) listens and tells you that it sounds great and says, "If you want, you could inform everyone about this at our meeting tomorrow."

Vignette 4

Please imagine that you have been working in an office at a company for a couple of months. It is Tuesday morning and you have come in early; only you, your manager and a co-worker are in. All of you started at the company at about the same time. You are working at your computer when your manager (co-worker) says "You must call your client at X&Y right away. By the way, you have to go to the 2 pm meeting. And be there on time! And you must tell them about my ideas regarding the new project." Your manager (co-worker) leaves and you continue working at your computer. Later, as you are having a coffee, you tell your manager (co-worker) about your suggestions concerning a specific client. Your manager (co-worker) doesn't seem to listen to you and tells you that you should not start with any experiments here, saying, "You should only follow the common directions and do what you are told."