

**Individuals' Fixed Digital Mindset, Internal HRM Alignment, and Feelings of Helplessness
in Virtual Teams**

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Abstract

Purpose

The present study investigates whether individuals having a fixed digital mindset (comprised of fundamental beliefs about technological ability and organizational resources as work becomes more digitalized) experience greater helplessness working in virtual teamwork environments. We examine how perceived internal HRM alignment moderates the positive relationship expected between individuals' fixed digital mindset and feelings of helplessness. Together, the paper aims to contribute to a greater understanding of the personal and contextual factors that influence an individual's experience of helplessness in virtual team settings.

Design/methodology/approach

We test our hypotheses using time-lagged survey data collected from 153 information technology (IT) engineers working in virtual teams in Europe.

Findings

We find that individuals with higher levels of fixed digital mindset experience greater helplessness in virtual teamwork environments than those with lower levels. Furthermore, we find that having higher fixed beliefs about organizational resources is positively related to helplessness when individuals perceive that the broader HRM system is misaligned with the virtual teamwork environment.

Research limitations/implications

The data were obtained from IT engineers in Europe, potentially limiting the generalizability of our findings to other work contexts and cultures.

Practical implications

Our study helps leaders in virtual teamwork environments to better understand and manage the personal and contextual factors that could affect individual well-being and effective functioning in these settings.

Originality/value

Our research contributes to the scant literature investigating the personal characteristics important in virtual teamwork environments and the contextual factors important for aligning virtual teamwork designs with the organizational system. We extend this research by looking at personal and contextual factors together in a single model.

Key words: Fixed digital mindset beliefs; technology ability; organizational resources; feelings of helplessness; perceived internal HRM alignment; virtual team

Introduction

Communicating and coordinating interdependent work through digital technology is an increasingly common way of organizing teamwork (Gibson & Cohen, 2003; Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015), especially following the COVID-19 pandemic (Rofcanin & Anand, 2020). In addition to preventing disease transmission, these “virtual team” arrangements are associated with benefits such as reduced costs and increased flexibility, inclusion, and sustainability (Cascio, 2000). Other advantages of virtual teams include increased access to global markets (Cascio, 2000), the ability to bring in competencies from different locations in the organization to improve decision making (Lipnack & Stamps, 1999), and increased work-life balance for employees (Hill, Miller, Weiner, & Colihan, 1998).

While having many benefits, virtual teamwork is also associated with several challenges. Reduced physical proximity combined with technology-mediated communication can cause difficulty creating a shared understanding, building trust, making decisions, managing conflict, giving and interpreting feedback, and expressing opinions between team members (Cramton, 2001; Gibson, Gibbs, Stanko, Tesluk, & Cohen, 2011; Hinds & Bailey, 2003; Hoch & Dulebohn, 2017). These challenges can trigger negative emotions, notably, frustration, in individuals working in virtual teams (Ayoko, Konrad, & Boyle, 2012). While virtual teams are quickly becoming a standard work practice, research suggests that some individuals deal with the challenges and negative emotions associated with virtual teamwork better than others (Luse, McElroy, Townsend, & DeMarie, 2013; Schulze & Krumm, 2017).

In the present study, we draw on Weiner’s (1985) attributional theory of emotion to consider how individuals having a “fixed digital mindset” (Solberg, Traavik, & Wong, 2020) could experience greater helplessness in virtual teamwork environments. Helplessness refers to an emotion that arises from the experience of frustration when an individual perceives a lack of

control over the current situation and the inability to change it (Ashforth & Saks, 2000; Frijda, Kuipers, & Ter Schure, 1989). Specifically, we propose that individuals who have a fixed digital mindset, which comprises both (1) the belief that technological ability is fixed, such that it cannot be easily changed or improved and (2) the belief that organizational resources are fixed, such that increases in workplace technology reduce the resources and opportunities available for employees, are more likely to experience greater feelings of helplessness. This is because they are predicted to attribute the challenges faced in virtual teamwork environments to factors that are not under their control to change.

Virtual team arrangements are just one part of the Human Resource Management (HRM) system, and should work together with and be reinforced by other parts of the HRM system to function optimally (Han, Kang, Oh, Kehoe, & Lepak, 2019). Therefore, we also examine how perceptions of internal HRM influence the relationship between individuals' fixed digital mindset and their feelings of helplessness. Drawing again from Weiner's (1985) attributional theory of emotion, we predict that individuals having a fixed digital mindset are likely to feel even more helpless when they perceive low HRM alignment between virtual teamwork practices and the larger HRM system, because low alignment signals that the challenges associated with virtual teamwork are caused by stable factors that are not under management control (Nishii, Lepak, & Schneider, 2008). Thus, we expect low perceived HRM alignment to intensify the helplessness experienced by individuals having a fixed digital mindset in virtual teamwork environments.

Taken together, our study examines the interactive relationship between the fixed digital mindset of individuals working in virtual teams and their perceptions of alignment between virtual teamwork practices and the larger HRM system in predicting feelings of helplessness.

Figure 1 depicts our conceptual model. In testing this model, our study makes several theoretical and practical contributions.

Insert Figure 1 about here

First, we contribute to the relatively small body of literature identifying personal characteristics that are important in work environments that demand virtual cooperation. While previous research has identified personality traits and competencies that are beneficial in virtual team settings (Luse et al., 2013; Schulze & Krumm, 2017), our study identifies how a fixed digital mindset could be detrimental. In doing this, our study provides greater insight regarding the individual consideration and support needed from leaders in workplaces that use virtual team without carefully selecting individuals with beneficial personal characteristics for these teams. Furthermore, research on well-being in virtual team settings is relatively scant, despite being generally acknowledged as important (Gilson et al., 2015). Feelings of helplessness impair well-being (Dijkstra, van Dierendonck, & Evers, 2005; Seligman, 1975; Sparr & Sonnentag, 2008). Accordingly, our study contributes to a greater understanding of the personal factors that could negatively influence individual well-being in virtual team settings. Finally, our study provides a better understanding of how perceived internal HRM misalignment, in combination with fixed digital mindsets, could amplify feelings of helplessness among individuals working in virtual teams. Our findings have useful implications for organizations where virtual teamwork is not clearly aligned internally with the larger HRM system, which could be particularly relevant in organizations forced to transition to virtual teamwork arrangements quickly. Organizational and

managerial actions that can be taken to address the issue of internal HRM misalignment are discussed.

Literature Review

Feelings of Helplessness and Virtual Teamwork

Helplessness is the negative affective psychological state that occurs when feelings of frustration develop in such a way that, despite desiring a change, the individual feels as though none of the actions they can take will make a difference (Frijda et al., 1989). Thus, helplessness is evident when an individual believes the issues they experience in a situation to be unresolvable and that their efforts to deal with these issues will be futile (Ashforth & Saks, 2000).

Accordingly, when an individual experiences helplessness, he or she will often resign from making further attempts to productively resolve the situation (Mikulincer, 1989). Hence, the situation causing these feelings of helplessness is likely to remain unchanged, creating a loss spiral that further deteriorates the situation and, alongside it, the individual's well-being (Dijkstra et al., 2005; Seligman, 1975).

Challenges at work that occur frequently and are associated with dysfunctional outcomes are more likely to lead to feelings of helplessness (Chung, Choi, & Du, 2017; Dijkstra et al., 2005). Since individuals working in virtual teams are required to collaborate and interact regularly, they are frequently exposed to challenges associated with this way of working (e.g., issues creating a shared understanding, making decisions, managing conflict, giving and interpreting feedback, expressing opinions), often resulting in dysfunctional outcomes (e.g., frustration, poor team performance). Therefore, individuals working in virtual teams could be more prone to experience helplessness. Moreover, we expect that some individuals will experience greater helplessness than others. In the sections that follow, we briefly describe

Weiner's (1985) attributional theory of emotion. We then identify fixed digital mindset as an important predictor of the variation in feelings of helplessness among individuals working in virtual teams based on Weiner's (1985) theory.

Weiner's (1985) Attributional Theory of Emotion

Weiner's (1985) attributional theory of emotion proposes that the attainment or nonattainment of a desired goal in any particular context initially gives rise to generally positive or negative emotions, such as feeling happy, frustrated, or sad. Following this initial outcome appraisal, causal explanations for the attainment or nonattainment of the desired goal are sought and ascribed. These "attributions" can be categorized in terms of three dimensions. The first dimension, locus of causality, describes the extent to which an individual's causal explanation for a particular outcome points to factors internal to the person or to external factors (see also, Heider, 1958). The second dimension, stability, refers to the extent to which the factor identified as the cause of the outcome is believed to be stable and therefore difficult to change, or unstable and thus changeable. The third dimension, controllability, refers to the extent to which an individual believes that he or she can exercise control over the identified causal factor. The combination of attributions that an individual ascribes to outcomes in a particular context subsequently generates the distinct emotions, including feelings of helplessness.

Weiner's (1985) attributional theory of emotion forms the basis of organizational models of helplessness (Martinko & Gardner, 1982), where helplessness is predicted to arise when an individual ascribes both internal and external causes of negative outcomes to stable factors that are difficult to change, and the individual believes he or she can exercise little control to change it. Central to Weiner's (1985) theory is the belief that these attributions reflect the causal world

as perceived by the individual, which offers an explanation for individual variations in the experience of helplessness in response to the same outcomes experienced in a particular context.

Hypotheses Development

Fixed Digital Mindset, Attributions, and Feelings of Helplessness Among Individuals

Working in Virtual Teams

Solberg et al. (2020) describe a digital mindset as being comprised of fundamental beliefs about personal and organizational resources as the workplace becomes more digitalized. The personal resource component reflects fundamental beliefs regarding the extent to which an individual's technological ability can be substantially changed or improved with effort. It is derived from research on implicit person theories by Dweck and colleagues (Dweck, 2006; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999). The organizational resource component of a digital mindset reflects fundamental beliefs about the extent to which organizational resources are determinate or expandable as new technology comes into the workplace. This belief component is informed by research on game theory (Morgenstern & Von Neumann, 1953) and zero-sum success construal (Sirola & Pitesa, 2017; Zhang & Sun, 2020).

Beliefs about technological ability are described by Solberg et al. (2020) as being fixed when an individual believes that technological ability (i.e., the knowledge and personal skills needed to work well with technology and keep up with technological changes) cannot be significantly changed or improved with effort. Conversely, individuals having lower fixed beliefs about technological ability are more likely to believe that technological ability can be changed and improved with effort. Moreover, beliefs about organizational resources are described as fixed when an individual believes that the more technology "succeeds" in the workplace, the more employees lose out on valued opportunities and resources. Individuals having lower fixed

beliefs about organizational resources are more likely to believe that organizational resources are not determinate and can be enlarged even as more technology is brought into the workplace (i.e., believe organizational resources are expandable).

In the present study, we expect that having a fixed digital mindset, comprised of the two fundamental belief components described above, will influence the attributions that individuals make about the challenges faced working in virtual teams such that the experience of helplessness is increased. Weiner's (1985) attributional theory of emotion as well as organizational models of helplessness based on this theory (Martinko & Gardner, 1982) posits that negative outcomes attributed to stable causes that are difficult to change are associated with greater feelings of helplessness. This is likely to be the case, regardless of whether the cause of the outcome is attributed to internal or external factors. For example, theory and empirical research support that when individuals attribute negative outcomes to their fixed ability, an internal and stable factor, they perceive themselves as having little control over the situation and therefore a low chance of successfully resolving the issue, resulting in feelings of helplessness (Hong et al., 1999; Martinko & Gardner, 1982). Similarly, when individuals attribute negative outcomes to external and stable factors, such as the difficulty of the task, one feels that one has little control over the situation and therefore a low chance of successfully resolving the issue (Frijda et al., 1989; Martinko & Gardner, 1982).

Building on this research, we expect individuals who believe technological ability is fixed to experience greater helplessness in virtual team settings, since they are more likely to attribute the challenges and dysfunctional outcomes in this context as arising from their fixed technological ability. Therefore, they are likely to perceive themselves as having little control over or chance of successfully resolving the issue. In the same vein, we expect that having fixed

beliefs about organizational resources should lead to similar attributions and emotions. In this case, individuals with fixed beliefs about organizational resources are more likely to attribute the challenges and dysfunctional outcomes experienced in virtual team settings to stable and external forces, specifically the difficulty created as technology reduces the resources available to take control. Therefore, they are less likely to view challenges in virtual teams as being under their control to change, resulting again in low expectancies about the successful resolution of the issue and subsequently greater feelings of helplessness.

Based on the arguments presented above, we expect that having fixed beliefs about technological ability and organizational resources will contribute to feelings of helplessness. However, we also expect that feelings of helplessness will be most pronounced when an individual holds fixed beliefs about both technological ability and organizational resources simultaneously, since they will neither perceive themselves as having the personal resources nor the organizational resources needed to assert control over the situation. Accordingly, we hypothesize:

Hypothesis 1: The two components of individuals' fixed digital mindsets (fixed beliefs about technological ability and fixed beliefs about organizational resources), interact in predicting feelings of helplessness in virtual team settings, such that felt helplessness will be highest when fixed beliefs about technological ability and organizational resources are both high.

The Moderating Role of Perceived HRM Alignment

When HRM practices are internally aligned with regards to their content and focus, the effectiveness of the HRM system as a whole in promoting desired performance is expected to be greater than the sum of its individual elements (Gerhart, 2007). The internal alignment of HRM practices (also called horizontal alignment or fit) is therefore concerned with the compatibility of an organization's HRM practices and the extent to which they work together and reinforce each

other in enhancing the ability, motivation, and opportunity of organizational members to perform in desired ways (Han et al., 2019). In particular, scholars emphasize the need for ability- and motivation-enhancing HRM practices to be aligned with work design, which increases the opportunity for able and motivated organizational members to perform (Christina, Dainty, Daniels, Tregaskis, & Waterson, 2017). Related to this, experiencing HRM alignment has also been highlighted as important for employee functioning in jobs incorporating distributed work designs, such as teleworking and virtual teamwork (Swan, Belanger, & Watson-Manheim, 2004). When HRM systems are misaligned with virtual teamwork, for example, when employees do not receive sufficient training on how to access and share knowledge with team members or when selection and promotion is based on visibility in a particular location, employee functioning in these settings is expected to suffer, despite the opportunity-enhancing qualities of virtual teamwork designs (Swan et al., 2004).

The perceived internal alignment of HRM systems with virtual teamwork designs is therefore important to consider in this study, since it likely contributes to the extent to which individuals perceive the challenges of virtual teamwork as frequent and dysfunctional, which in turn influences feelings of helplessness (Chung et al., 2017; Dijkstra et al., 2005). Moreover, the relationship between perceived internal HRM alignment and individuals' feelings of helplessness can also be examined through the lens of Weiner's (1985) attributional theory. Research building on Weiner's (1985) attributional theory indicates that the consistency of HRM messages created by internal HRM alignment leads organizational members to attribute challenges experienced at work to stable external factors under management control (Nishii et al., 2008). Conversely, low perceived internal HRM alignment signals that the challenges are caused by stable factors that management does not have control over.

As such, when HRM practices are perceived as being internally aligned with virtual teamwork, we expect that individuals working in virtual teams will experience fewer dysfunctional issues and will perceive greater managerial control over the situation, thereby decreasing their feelings of helplessness. Alternatively, when HRM practices are perceived as being internally misaligned with virtual teamwork, it is likely that individuals working in virtual teams will not only experience more issues related to conflicting HRM practices (Swan et al., 2004), but will also be less likely to expect management to have the control necessary to improve the situation, therefore increasing feelings of helplessness.

Our focus in the present research is on the interactive relationship between individuals' fixed digital mindset and their perceptions of internal HRM alignment in predicting the levels of helplessness experienced. As previously elaborated, we expect that individuals having fixed beliefs about technological abilities are more likely to experience helplessness in virtual team environments as they are likely to attribute the challenges and dysfunctional outcomes experienced in this environment to their fixed technological ability – a stable, internal factor that is not easy to change. However, we expect that the helplessness experienced by these individuals will be even greater when perceived internal HRM alignment is low, since they will be more likely to attribute the challenges associated with virtual teamwork to stable factors that are neither under their own nor managers' control. Similarly, as previously elaborated, we expect that an individual who has fixed beliefs about organizational resources should experience greater helplessness in virtual team environments, as they are more likely to attribute the challenges and dysfunctional outcomes experienced in this environment to stable, external forces. . However, we expect that the helplessness experienced by these individuals will be even greater when perceived internal HRM alignment is low, because the challenges associated with virtual

teamwork will also be associated with other stable, external factors that are not under managerial control. Accordingly, we hypothesize:

Hypothesis 2a: The positive relationship between individuals' fixed beliefs about technological ability and their feelings of helplessness in virtual team settings will be moderated by perceived internal HRM alignment, such that helplessness will be higher for individuals having high fixed beliefs about technological ability when perceived internal HRM alignment is low.

Hypothesis 2b: The positive relationship between individuals' fixed beliefs about organizational resources and their feelings of helplessness in virtual team settings will be moderated by perceived internal HRM alignment, such that helplessness will be higher for individuals having high fixed beliefs about organizational resources when perceived internal HRM alignment is low.

Method

Procedure

A two-stage, time-lagged, self-report survey design method was used to test the study's hypotheses. The Time 1 survey was distributed in March 2018 through a web-based tool (Qualtrics). It measured respondent's fixed digital mindset and perceptions of internal HRM alignment. Respondents were given three weeks to reply. The Time 2 survey was distributed three months later to those respondents who had completed the Time 1 survey. It measured respondents' feelings of helplessness. The time-lagged design was selected because it minimizes the potential for common method bias (Podsakoff, 2003). Self-report data was deemed appropriate for this study as all constructs were, by nature, beliefs, perceptions, and feelings that cannot be assessed by others (Paulhus & Vazire, 2007).

Sample

The study sample consisted of 535 Information Technology (IT) engineers working with software development projects in distributed teams across eight different locations in Europe. All engineers worked for a single firm, which was one of Europe's leading providers of core

business software to organizations across sectors. Research indicates that individuals with higher ability in a domain have the same variation in fixed beliefs about ability as individuals having lower ability (Macnamara & Rupani, 2017). In other words, although our sample consists of technical workers, there is no reason to believe that individuals working in IT positions have less fixed beliefs about organizational resources than individuals working in non-IT functions. Indeed, rapid technological advances, particularly in artificial intelligence and machine learning, can pose as much of a threat to individuals working in IT than individuals working in other areas (Korolov, 2018). Therefore, we viewed technology workers as individuals who vary in their fundamental beliefs about personal and organizational resources in the same way that individuals working in other functional areas do. Accordingly, we considered this an appropriate sample in which to test our conceptual model.

A total of 153 (28.6%) respondents completed the Time 1 survey. Of these, 107 (69.9%) responded to the Time 2 survey, reflecting a final response rate of 20.0%. The final sample consisted of IT engineers from 42 geographically distributed teams (ranging between 1 to 8 participants per team unit). We subsequently assigned each participant a unique team identification number. Distribution of respondents in terms of gender and educational level is outlined in Table 2. On average, respondents were 37.10 (*S.D.* = 11.12) years old. In addition, respondents' average organizational tenure was 6.69 (*S.D.* = 8.38) years.

Insert Table 1 & 2 about here

To assess potential dropout biases, mean comparisons were performed to examine whether there were differences between the final sample ($N_I = 107$) and among those who had completed

the Time 1 survey but dropped out at Time 2 ($N_2 = 46$). No differences were observed in their demographic characteristics, including age, gender, and organizational tenure, as shown in Table 3. There were also no significant differences observed for fixed beliefs about technological ability or organizational resources. However, perceived internal HRM alignment was significantly higher among those who have answered both the Time 1 and Time 2 surveys than among those who had dropped out at Time 2. Mean scores and comparison statistics for both samples are provided in Table 3. We measured the dependent variable, i.e., feelings of helplessness, at Time 2. Therefore, no mean comparison could be conducted between the two groups. Taken together, we consider that the potential dropout bias was not problematic.

Measures

All variables were adapted from previous research and were measured using a five-point scale from 1 (strongly disagree) to 5 (strongly agree), unless otherwise stated. The reliability coefficients, Cronbach alpha (α) values, of all variables were above .70, as shown in Table 1.

Fixed digital mindset (Time 1)

Fixed digital mindset is comprised of beliefs about technological ability and organizational resources. Items were developed to measure both components.

We used a four-item scale adapted from the measure of implicit theories of intelligence developed by Dweck, Chiu, and Hong (1995) to capture individual beliefs about the extent to which technological ability is fixed. A sample item is, “A person’s level of technological ability is something basic about them, and there isn’t much that can be done to change it.” Higher levels of agreement with the items reflect higher levels of fixed beliefs about technological ability. The reliability coefficient of the four-item scale was .78.

Six-items were developed to measure individual beliefs about the extent to which organizational resources are fixed, such that the introduction of new technology leads to the loss of organizational resources for employees. Previous measures developed for other domains provided input for measure development (Esses, Jackson, & Armstrong, 1998; Różycka-Tran, Boski, & Wojciszke, 2015; Sirola & Pitesa, 2017). Sample items are: “New technologies reduce the opportunities for current employees to succeed in their current jobs,” and “When technological changes are introduced in organizations, employees often lose out.” Higher levels of agreement with the items reflect higher levels of fixed beliefs about organizational resources. The reliability coefficient for the six-item scale was .70.

Perceived internal HRM alignment (Time 1)

Perceived internal HRM alignment was measured using a seven-item scale adapted from a similar measure of high-performance work systems alignment developed by Evans and Davis (2005). Respondents were asked to indicate the extent to which the virtual teamwork environment that they worked in aligned with other work systems (e.g., staffing, decision making, training, compensation) on a scale from 1 (no alignment) to 5 (full alignment). A sample item is “Our virtual teamwork environment fits well with the current decision-making procedures our team has to apply or is applying.” The reliability coefficient of the seven-item scale was .84.

Feelings of helplessness (Time 2)

Feelings of helplessness was measured by three items from Ashforth and Saks' (2000) six-item measure. Per best practice recommendations, effort was made to select items that optimized the reliability and content validity of the measure (Heggestad et al., 2019). As several studies indicate that reverse-scored items can negatively affect the reliability and content validity of a measure (Dalal & Carter, 2015), we omitted the two reverse-scored items from the original

measure of our selection. Of the remaining four items, we selected three that sufficiently captured the construct domain. Items used in the study were, “I have little influence over what happens around here at work,” “I do not have enough power to make any real changes at work,” and “No matter what I do, nothing seems to have an effect at work.” The reliability coefficient of the three-item scale was .84.

Control variables (Time 1)

To account for the potential influence of individual demographic variances on work process (Payne, Youngcourt, & Beaubien, 2007), we included gender, age, education, and organizational tenure in testing the hypotheses as control variables. Respondents reported their ages and organizational tenure in true years. Gender was measured according to three categories: 1 = male, 2 = female, and 3 = neither male nor female. Education was measured on five educational levels: 1 = high school education, 13 years; 2 = higher diploma, 14 years; 3 = bachelor’s degree, 16 years; 4 = master’s degree, 18 years or higher, 5 = doctorate degree, 21 years or higher.

Analytic Procedures

Although time-lagged data collection was carried out to help minimize potential common method bias, we conducted common method bias testing using common latent factor to assess whether common method bias could be a persuasive issue for our study. Following the common latent factor procedure, we added a common latent variable to all observed items for each latent construct, including fixed beliefs about technology ability, fixed beliefs about organizational resources, perceived internal HRM alignment, and feelings of helplessness in a CFA model using AMOS (Archimi, Reynaud, Yasin, & Bhatti, 2018). We then ran another CFA model without the common latent factor and compared the standardized regression weights of the two models. The differences of the standardized regression weights between the two models ranged from 0.001 to

0.12, which were lower than the recommended threshold 0.20 (Archimi et al., 2018). We concluded that common method bias is not an issue for the data collected to test our hypotheses.

Although all the variables studied in the present study were at the individual level, the non-independence within teams could bias the standard error estimates (Maas & Hox, 2005). We therefore applied multilevel analysis with individual variables as Level 1 and the unique team unit number as Level 2 to test the hypotheses. Before testing the hypotheses, we assessed the degree of interdependence between teams for the dependent variable (Bryk & Raudenbush, 1992). To do so, we ran a null hypothesis test only with feelings of helplessness as the outcome variable, without any predictor added in the model. The intra-class correlations (ICC) for helplessness was .00. Although the ICC was small, we proceeded to test our hypotheses using the multilevel analytic method to account for potential shared variances, ensuring more conservative estimations (Hox, 2010).

In our analysis, we centered all independent variables using grand means to guard against potential multicollinearity and potential effects derived from the correlations between random intercepts and random slopes in a multilevel model (Bickel, 2007). Our statistical model therefore involved a set of regression equations nested in two levels: Level 1 at the individual level of analysis and Level 2 at the team level of analysis. While the fixed effects were estimated based on the variables at the individual levels, the random effect was the intercept based on the team units. There are no standard rules of thumb concerning sample size, but previous studies have shown that groups above 30 provide satisfactory variance estimates (Maas & Hox, 2005). Nevertheless, restricted maximum likelihood (REML) was applied as recommended for more conservative estimates of small group samples (Heck, Thomas & Tabata, 2014).

Hypothesis 1 (H1) posited that the two components of individuals' fixed digital mindset, fixed beliefs about technological ability and fixed beliefs about organizational resources, interact in predicting feelings of helplessness, such that feelings of helplessness would be highest when fixed beliefs about technological ability and organizational resources were both high. To examine this hypothesis, we assessed the estimate of the interaction term between the two fixed belief components and plotted the two-way interaction based on Dawson's (2014) procedure. H1 would be supported if the interaction between the two fixed belief components of fixed digital mindset was significant and positive, and the interaction plot was in the expected direction. H2 posited an interaction between perceived internal HRM alignment and individuals' fixed beliefs about technological ability (H2a) and organizational resources (H2b) in predicting feelings of helplessness. These hypotheses would be supported if the interaction terms between each of the fixed belief components and perceived internal HRM alignment were negative and significant, and the interaction plot was in the expected direction.

Results

Table 1 shows the descriptive statistics of the variables' measured means, standard deviations, and the bivariate correlations. The bivariate correlations indicate that participants' demographics in terms of age, gender, education, and organizational tenure were not correlated with either belief components comprising a fixed digital mindset or with feelings of helplessness. However, respondents who had been working longer in the organization tended to report lower perceived internal HRM alignment ($r = -.19, p < .05$).

CFA Results

We conducted confirmatory factor analyses (CFA) with maximum likelihood estimation procedures using AMOS to ensure the adequacy of our measurement model. The expected four-

factor solution (fixed beliefs about technology ability, fixed beliefs about organizational resources, perceived internal HRM alignment, and feelings of helplessness) displayed an adequate fit with the data (chi-square [164] = 219.57, CFI = .91, RMSEA = .05). We tested alternative nested models to examine whether a more parsimonious model achieved an equivalent fit. A three-factor solution forcing fixed beliefs about technology ability and fixed beliefs about organizational resources on the same factor yielded a poorer fit (chi-square [167] = 287.68, CFI = .80, RMSEA = .08). The same applied to the two-factor solution with fixed beliefs about technology ability, fixed beliefs about organizational resources, and perceived internal HRM alignment loading on the same factor (chi-square [169] = 442.91, CFI = .56, RMSEA = .12). The model with all latent variables loading on the same factor yielded the poorest fit (chi-square [170] = 593.98, CFI = .32, RMSEA = .15). The four-factor model displayed the best model fit compared to three alternative nested models.

Hypotheses Testing

Hypothesis 1

We conducted cross-level regression analyses to test our hypotheses using SPSS MIXED model. Results in Model 1 of Table 2 show that both fixed beliefs about technological ability and fixed beliefs about organizational resources were positively related to feelings of helplessness (.20, $p < .10$ and .45, $p < .01$, respectively); however, only the relationship between fixed beliefs about organizational resources and feelings of helplessness was significant. As shown in Model 2 of Table 4, the two-way interaction term between the two belief components of fixed digital mindset was positive and significant (.46, $p < .01$), as expected. We further inspected the moderating pattern by testing the simple slopes between fixed beliefs about technological ability and feelings of helplessness at low and high levels of fixed beliefs of organizational resources

(Dawson & Richter, 2006), using one standard deviation (.53) below and above, respectively.

The simple slope estimate found between fixed beliefs about technological ability and feelings of helplessness was positive but non-significant when fixed beliefs about organizational resources was low (.01, *n.s.*). However, the simple slope estimate between fixed beliefs about technological ability and feelings of helplessness was positive and significant when fixed beliefs about organizational resources was high (.50, $p < .01$). The plots of the simple slopes are depicted in Figure 2. The results therefore support H1.

Insert Table 4 and Figure 2 about here

Hypothesis 2a

To test H2a, we inspected the two-way interaction term between fixed beliefs about technological ability and perceived internal HRM alignment. As shown in Table 4, the two-way interaction term between fixed beliefs about technological ability and perceived internal HRM alignment was positive and significant (.32, $p < .05$). We examined and plotted the simple slopes to further inspect the pattern of the interaction. We found that when perceived internal HRM alignment was low, the slope between fixed beliefs about technological ability and feelings of helplessness was positive, but non-significant (.04, *n.s.*). However, when perceived internal HRM alignment was high, the slope was positive and significant (.62, $p < .01$). As shown in Figure 3, individuals having low fixed beliefs about technological ability reported feeling less helplessness when perceived internal HRM alignment was high. On the other hand, individuals having high fixed beliefs about technological ability reported equivalent levels of helplessness regardless of whether perceived HRM alignment was high or low. Although the interaction

between fixed beliefs about technology ability and perceived internal HRM alignment was statistically significant, the pattern of interaction was not in alignment with our hypothesis. The hypothesis had posited instead that individuals with high fixed beliefs about technological ability would feel greater helplessness when perceived internal HRM alignment was low. Accordingly, H2a was not supported.

Insert Figure 3 about here

Hypothesis 2b

To test H2b, we inspected the two-way interaction term between individuals' fixed beliefs about organizational resources and perceived internal HRM alignment. As shown in Table 4, the two-way interaction term was negative and significant ($-.50, p < .05$). The slope between fixed beliefs about organizational resources and feelings of helplessness was positive and significant when perceived internal HRM alignment was low ($.62, p < .05$), whereas the slope was negative and non-significant when perceived internal HRM alignment was high ($-.04, n.s.$). We further plotted the interaction and inspected its pattern. As illustrated in Figure 4, the findings support H2b, where the positive relationship between fixed beliefs about organizational resources and feelings of helplessness was stronger when perceived internal HRM alignment was low. High fixed beliefs about organizational resources were associated with lower level of helplessness when perceived internal HRM alignment was high.

Insert Figure 4 about here

Discussion

The present study examined whether individuals working in virtual teams who have a fixed digital mindset, comprised of beliefs that technological ability and organizational resources are fixed, experience greater helplessness. Furthermore, we examined whether perceptions of misalignment between virtual teamwork practices and other HRM practices strengthened the positive relationship between the two belief components of fixed digital mindset and feelings of helplessness.

Our results point to the need to understand how certain personal and contextual factors could be potentially harmful in virtual teamwork environments, both alone and in combination. In line with our hypotheses, our findings indicate that individuals having a fixed digital mindset are more likely to experience helplessness in virtual team settings. In addition, our findings indicate that perceived misalignment between the virtual teamwork environment and other HRM practices intensifies the helplessness felt by individuals with fixed beliefs about organizational resources. Importantly, the results of the present study were found in a sample of technology workers. This suggests that issues related to fixed digital mindset and the internal alignment of virtual teamwork practices with other HRM practices are not only relevant for individuals who may be in less technical jobs or who have relatively less technological ability.

Theoretical Implications and Future Research

Virtual teams are increasingly common in the workplace, particularly following the COVID-19 pandemic. Accordingly, our findings provide important insights to improve individual functioning in virtual team settings. Challenges related to creating a shared understanding, building trust, making decisions, managing conflict, giving and interpreting feedback, and expressing opinions between team members in virtual teams are well recognized

(Cramton, 2001; Gibson et al., 2011; Hinds & Bailey, 2003; Hoch & Dulebohn, 2017). Much of the research on virtual teams to-date has focused on team processes and work methods, such as communication patterns, communication tools used, and effective team management behaviors (Gilson et al., 2015). Less attention has been paid to the personal characteristics that are beneficial or detrimental to individual functioning in virtual team settings (Colbert, Yee, & George, 2016). Research has begun to identify certain personal characteristics that could help individuals function effectively and even thrive in these challenging team settings (Luse et al., 2013; Schulze & Krumm, 2017). Our research adds to this body of literature by indicating that having a fixed digital mindset makes individuals more likely to feel helpless in virtual team contexts. Together, our findings indicate the need for future research on virtual teams to more actively consider the individual differences of virtual team members.

Furthermore, the internal alignment of HRM practices is well recognized as important for organizational and individual outcomes in the HRM literature (Bowen & Ostroff, 2004; Evans & Davis, 2005; Gerhart, 2007; Han et al., 2019) as well as in research examining how organizations adopt virtual team arrangements (Swan et al., 2004). However, to our knowledge, little empirical research has examined how perceived HRM alignment/misalignment is related to relevant outcomes in virtual team settings. We found that perceived misalignment between virtual teamwork practices and other HRM practices intensifies the helplessness experienced by individuals who have fixed beliefs about organizational resources. Conversely, perceived internal HRM alignment was found to be important in attenuating the positive relationship between high fixed beliefs about organizational resources and feelings of helplessness. However, when considering fixed beliefs about technological ability, perceived internal HRM alignment only appeared to reduce feelings of helplessness among individuals low on this component. These

findings suggest that perceived internal HRM alignment is more effective for attenuating helplessness when individuals attribute the negative outcomes experienced in virtual teamwork environments to stable and external factors than to internal factors. It is possible that the perceived internal causes of the challenges and dysfunctional outcomes experienced by individuals in virtual team settings cannot be offset by contextual (i.e., external) factors that demonstrate controllability. However, future research is needed on the topic to lend support for this finding and to explain why this might be the case.

Our research also contributes to a growing body of literature applying attributional theories to explain the relationship between the outcomes associated with HRM practices and employee emotions, attitudes, and performance (Hewett, Shantz, Mundy, & Alfes, 2018). As indicated in Hewett et al.'s (2018) review of the literature, research to-date has largely focused on outcomes associated with performance appraisal practices. To our knowledge, no research has applied attributional theories to explain the relationship between work design, specifically virtual team designs, and employee outcomes. Nor has it applied attributional theory-based models of organizational helplessness (Martinko & Gardner, 1982) to explain the relationship between work design, specifically virtual team designs, and helplessness in these work contexts. Our study takes a first step in developing research in this area. Notably, however, although we based the arguments leading to our hypotheses on attribution theory, we did not measure attributions in our model. Additional research is needed to test whether certain attributions underlie the relationship between fixed digital mindset, internal HRM alignment, and feelings of helplessness, as argued in this study.

Our study also contributes to a greater understanding of the factors influencing individual well-being in virtual team settings, a topic that requires more focus in the literature (Gilson et al.,

2015). While we did not include a direct measure of well-being in our study, feelings of helplessness are known to be detrimental for individual well-being (Dijkstra et al., 2005; Seligman, 1975; Sparr & Sonnentag, 2008). We encourage future researchers to consider the implications that fixed digital mindset could have for well-being more specifically. Similarly, while we express interest in understanding more clearly what could hinder some individuals from functioning effectively in virtual team settings, we did not include a direct measure of performance or other indicators of effective functioning in our study. Existing research indicates that feelings of helplessness could lead to less effective coping behaviors and even situational withdrawal (Dweck & Leggett, 1988; Frijda et al., 1989) We encourage future researchers to consider the implications that fixed digital mindset could have for the functioning of individuals working in virtual teams, both directly and through their feelings of helplessness.

Finally, in the current study, we conceptualize fixed digital mindset as an individual level construct comprised of individuals' fixed beliefs about technological ability and organizational resources. Future researchers examining fixed digital mindset in the context of virtual teams could expand the construct to explore fixed beliefs relating to the team's technological ability and the team's resources in facing digitalization. For example, a study conducted by Lau (2011), conceptualized team resources as team orientation, similar to team psychological capacity (Bogler & Somech, 2019) or team culture/climate (Albrecht, 2012). Conceptualizing and testing a team level mindset model could expand the application of mindset theory and the digital mindset concept.

Practical Implications

Virtual teamwork is becoming an increasingly standard work practice. Therefore, it is important for both the top management of organisations employing virtual teamwork

arrangements, and the leaders of these virtual teams, to gain an understanding of how to help individuals who have fixed mindsets cope with the demands and challenges of this type of work context. This understanding is important, not only for safeguarding individual well-being and functioning, but also for creating an inclusive and collaborative virtual teamwork environment.

First, leaders must be aware that individual differences within digital mindset exist and can result in varying feelings of helplessness among employees working in virtual teamwork environments. Leaders must also be able to identify these individual differences. Talking with employees to get a sense of how they view technological ability (fixed or malleable) and organizational resources in the context of technological change (fixed or expandable) is a first step to understanding their personal needs for support in this context.

Next, leaders can help to shift beliefs about technological ability and organizational resources from being fixed towards the idea that they are malleable/expandable. Leaders can positively influence beliefs about technological ability by helping their employees think of challenges associated with working with technology as opportunities to learn and develop, rather than a barometer of their ability (Keating & Heslin, 2015). They can also help employees to see the brain as a muscle that grows stronger and smarter as it engages in more learning experiences, and reflect on ways to strengthen their brains by working through the challenges posed by workplace technology (Yeager et al., 2019). Leaders can influence individual beliefs about organizational resources by emphasizing how technology actually creates or frees up organizational resources rather than reduces them, and by reducing perceptions of a competition for resources in work settings (Solberg et al., 2020).

Moreover, leaders can directly implement efforts to reduce helplessness by increasing employees' perception of control over work outcomes. This can be achieved by providing

individuals with greater resources, such as training in technology-mediated communication, or by removing obstacles that result in dysfunctional outcomes. For example, leaders could place individuals in virtual teams where members are all in close time zones to reduce the need for asynchronous communication (Ashforth & Saks, 2000).

Finally, our findings that perceived internal HRM alignment attenuates feelings of helplessness for individuals having fixed beliefs about organizational resources emphasizes the importance of ensuring that the greater HRM system is aligned with the virtual teamwork environment. Ensuring internal HRM alignment is, in part, a job for HR managers who develop intended HRM practices. However, it also relies on leaders to ensure that HRM practices are delivered in a way such that employees experience them as intended, and perceive them as being aligned (Han et al., 2019). In virtual team contexts, special attention is needed with regards to aligning team processes across geographical locations that may vary in terms of office hours, holidays, labour regulations, etc. Furthermore, attention is needed on how team members from different geographical locations may perceive HRM practices differently due to cultural differences.

Limitations

The findings of our study should be taken in light of its limitations. First, our results could be impacted by common method bias, as all measures were self-reported. Since our study involved constructs reflecting individual beliefs and perceptions, self-report was determined the most appropriate method of data collection. Therefore, we employed a time-lagged design to reduce the likelihood of common-method variance among the variables (Podsakoff, 2003) and reduce the bias. Additionally, we conducted common method bias test using common latent factor. This analysis supported that common method bias was not a pressing issue for our study.

Second, we used only three items from the original six-item helplessness measure developed by Ashforth and Saks (2000). Although the three-items were selected based on best practice recommendations (Heggestad et al., 2019), we acknowledge that empirical tests could have strengthened the validity of our selection. Future research could do this by administering the full measure at one time period and in another time period randomly administering the full scale to half the sample and the shortened scale to the other half and comparing correlations (Heggestad et al., 2019).

Furthermore, data for our study were obtained from IT engineers in Europe, potentially limiting the generalizability of our findings to individuals working in other work contexts and cultures. Lastly, respondents who dropped out from the Time 1 survey reported significantly lower perceived internal HRM alignment than those who completed both Time 1 and 2. Although significant mean value differences were not found for the other study variables, it is possible that potential dropout bias can be present.

Conclusion

While virtual teamwork arrangements are associated with a host of benefits, they are also known to involve numerous challenges resulting from reduced physical proximity between team members and the reliance on technology-mediated communication. These challenges can trigger negative emotions in individuals, notably frustration, which are likely to give rise to feelings of helplessness. We initiated the present study to investigate if having a fixed digital mindset explains variations in feelings of helplessness experienced by individuals working in virtual team environments. Furthermore, we sought to examine whether HRM misalignment could further intensify feelings of helplessness among individuals who see technological ability and organizational resources as fixed. Our findings provide valuable insight regarding personal and

contextual factors that could be detrimental for individuals' emotional responses and well-being in virtual team environments. Virtual team arrangements are increasingly common, particularly following the COVID-19 pandemic. The findings of our study are particularly useful for organizations who have implemented virtual team arrangements in haste, without considering the personal fit between the individual and this way of working, or the importance of aligning virtual teamwork designs with other HRM practices.

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Table 1 Respondents' Gender and Educational Level

Gender	Percent	Education Level	Percent
Male	73.8%	Middle school	0.9%
Female	26.2%	High school	10.3%
		Diploma degree	5.6%
		Bachelor's degree	54.2%
		Master's degree	29.0%

N = 107.

Table 2 Means, Standard Deviations, Correlations, and Alpha Reliabilities among Variables

Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. Gender ¹	1.26	.44	-							
2. Age ¹	37.10	11.12	.23*	-						
3. Education ¹	4.00	.92	-.05	-.14	-					
4. Organizational tenure ¹	6.70	8.42	.67**	.12	-.14					
5. Fixed beliefs about technology ability ¹	2.68	.73	-.80	-.14 [†]	-.14 [†]	-.11	(.78)			
6. Fixed beliefs about organizational resources ¹	2.39	.53	-.10	-.10	-.06	-.15	.30**	(.70)		
7. Perceived internal HRM alignment ¹	3.46	.65	.01	.16 [†]	-.04	-.19*	.08	-.10	(.84)	
8. Feelings of helplessness ²	2.48	.86	.07	.05	-.19 [†]	.11	.24*	.33**	-.20*	(.84)

N = 107.

¹ Indicates variables measured at Time 1; ² Indicates variables measured at Time 2.

Alpha coefficients are in parentheses on the diagonal.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 3. Mean Comparisons of Study Variables Between the Final Sample ($N_1 = 107$) and Respondents Who Dropped Out at Time 2 ($N_2 = 46$)

Variable	$N_1 = 107$		$N_2 = 46$		p
	Mean	S.D.	Mean	S.D.	
Age	37.10	11.11	37.97	12.32	.68
Gender	1.26	.44	1.15	.36	.14
Organizational tenure	6.69	8.38	4.30	4.91	.07
Fixed beliefs about technological ability	2.68	.73	2.61	.77	.60
Fixed beliefs about organizational resources	2.39	.53	2.46	.58	.49
Perceived internal HRM alignment	3.46	.65	3.15	.89	>.05

Table 4 Cross-level Regression Analyses Results

Variables	Fixed Effects Coefficients – Feelings of Helplessness ²	
	Model 1	Model 2
Intercept	2.31(.38)**	2.53(.39)**
Age ¹	-.00(.01)	-.01(.01)
Gender ¹	-.18(.17)	-.24(.16)
Education (Middle school) ¹	-.33(.80)	-.19(.76)
Education (High school) ¹	.52(.28)†	.51(.23)†
Education (Diploma degree) ¹	.06(.34)	-.03(.32)
Education (Bachelor’s degree) ¹	.34(.17)*	.39(.16)*
Organizational tenure ¹	.02(.01)	.02(.01)
Fixed beliefs about technology ability (FTA) ¹	.20(.11)†	.25(.11)*
Fixed beliefs about organizational resources (FOR) ¹	.45(.15)**	.29(.17)†
Perceived internal HRM alignment (HRMA) ¹		-.35(.12)**
FTA x FOR ¹		.46(.13)**
FTA x HRMA ¹		.32(.16)*
FOR x HRMA ¹		-.50(.22)*
Model deviance (AIC)	264.20	256.77
Simple slopes tests:	H1: FTA x FOR ¹	Low FOR (1): 0.01 (<i>n.s.</i>) High FOR (2): 0.50**
	H2: FTA x HRMA ¹	Low HRMA (1): 0.04 (<i>n.s.</i>) High HRMA (2): 0.46**
	H3: FOR x HRMA ¹	Low HRMA (1): 0.62* High HRMA (2): -0.04 (<i>n.s.</i>)

Note. N = 107. Fixed effects coefficients and their robust standard errors are shown. ¹ Indicates variables measured at Time 1; ² Indicates variables measured at Time 2. For gender, 0 was code as male and 1 was coded as female. Female was used as a reference. For education, master degree or above was used as a reference.

†*p* < 0.10, **p* < 0.05, ***p* < 0.01.

Figure 1

The Conceptual Model

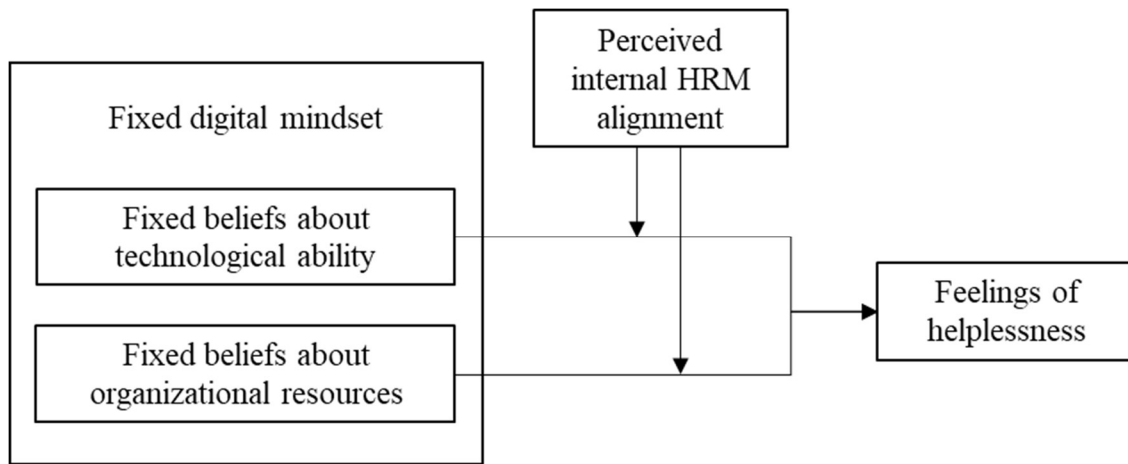


Figure 2

Plot of the two-way interaction between fixed beliefs about technological ability and fixed beliefs about organizational resources on individual's feelings of helplessness (Hypothesis 1)

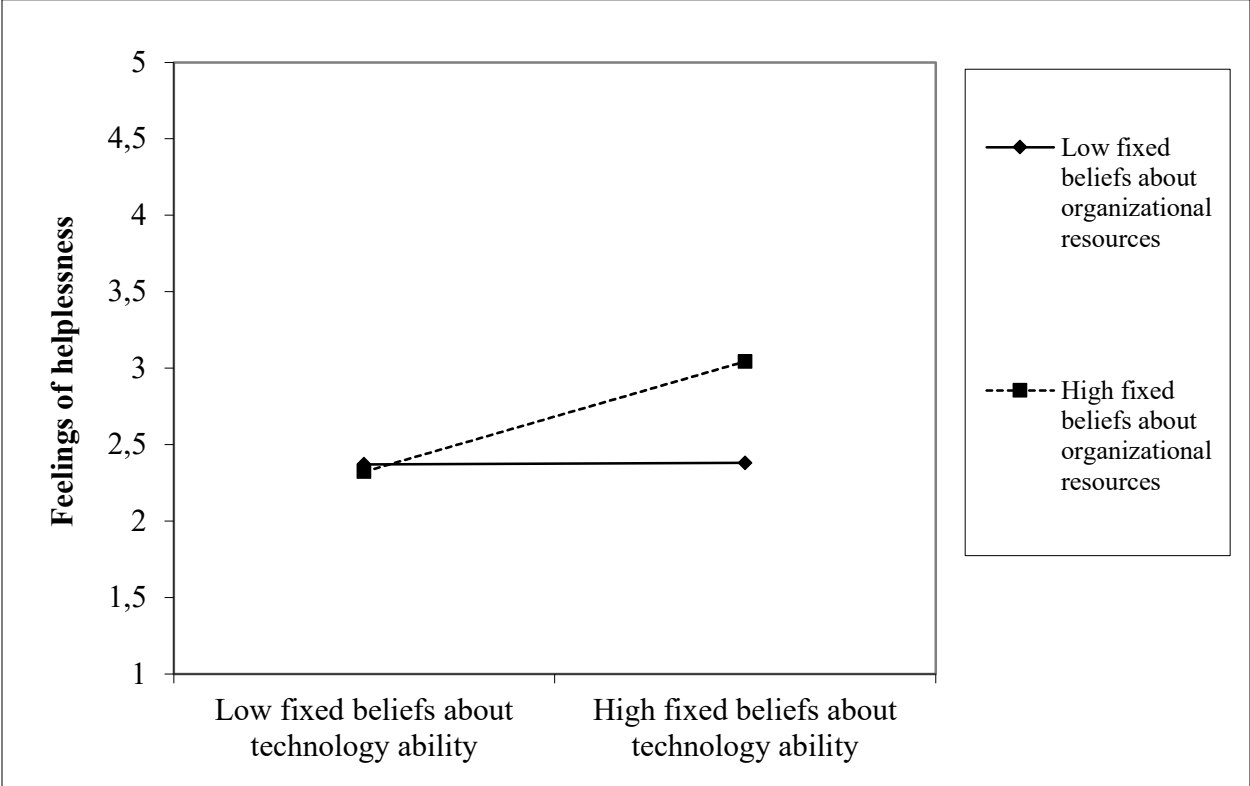


Figure 3

Plot of the two-way interaction between fixed beliefs about personal resources and perceived internal HRM alignment on individuals' feelings of helplessness (Hypothesis 2a)

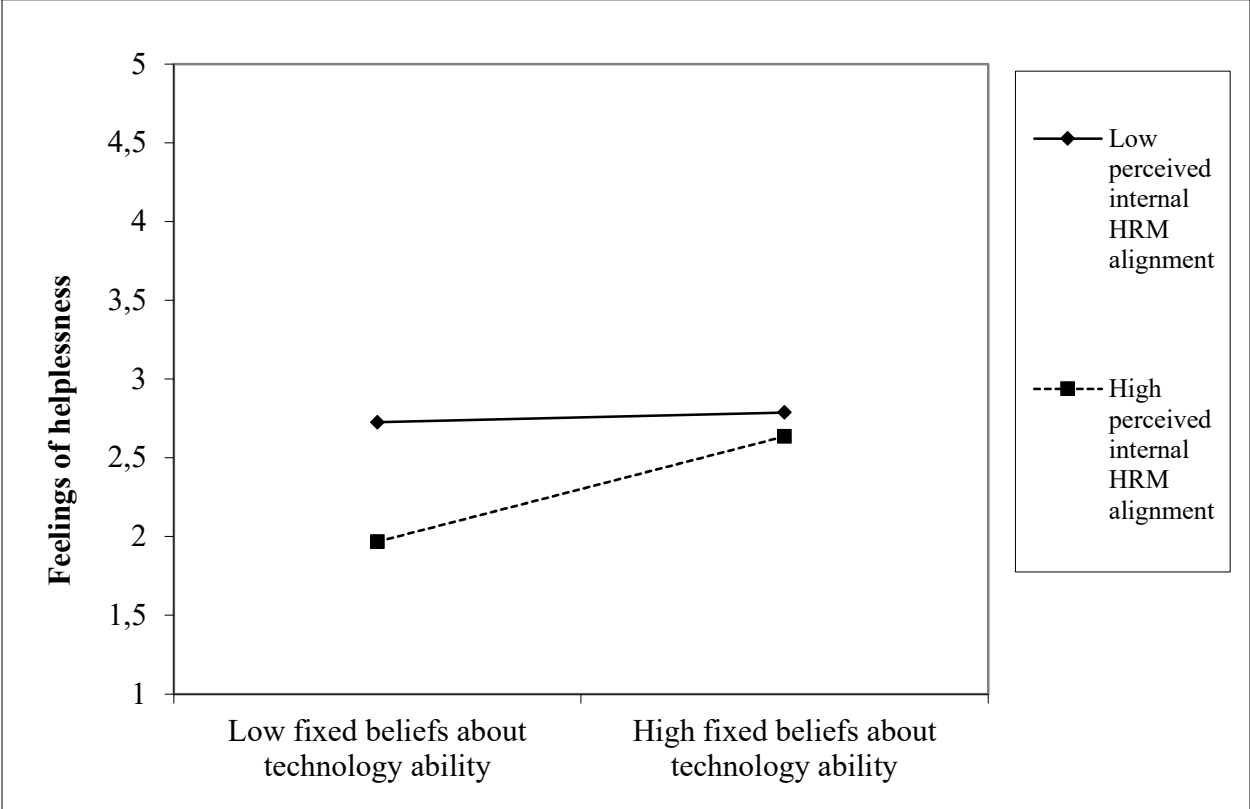


Figure 4

Plot of the two-way interaction between fixed beliefs about organizational resources and perceived internal HRM alignment on individuals' feelings of helplessness (Hypothesis 2b)

