MASTER THESIS

The effect of daily workplace interactions on novice nurses workplace belongingness during their first three months in a healthcare organisation

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Abstract

A sufficient inflow of novice nurses is essential to meet the current shortages within the global healthcare sector. However, the high dropout rate of novice nurses within two years of their appointment is a cause of great concern. New employees seem to leave health organisations during their onboarding process. Studies suggest that workplace belongingness can play an essential part during the onboarding period in determining whether employees want to stay in a health organisation. There is also scientific evidence that workplace interactions can play an important role in increasing workplace belongingness. In addition, other studies have already emphasised the role of feeling accepted and competent in enhancing a feeling of workplace belongingness. Therefore, this study investigates the effects of feeling accepted and competent as evoked by everyday workplace interactions experienced by newly hired healthcare employees on their workplace belongingness. In the first three months, a daily diary study among novice nurses was conducted. Data is collected from a Dutch VVT organisation (Verpleeg- en Verzorgingshuizen en Thuiszorg; nursing homes and home care). In the first three weeks of practice, based upon the most crucial interaction, the novice nurses completed the daily questionnaire at the end of each workday. After these three weeks, the questionnaire was completed once per week for six consecutive weeks. This was done after the last workday of the week. The daily and weekly questionnaires were completed via an app on the participants' smartphones. A multilevel model was adopted based upon a day-level (within-person) and person-level (between-person) outcome. The outcomes of this study indicated that interactions that cue feelings of acceptance and competence do have a significant effect on workplace belongingness among novice nurses in the VVT-sector. These outcomes were established on both a daily level and person-level. These findings were in line with the established hypothesis in this study. The findings of this study emphasise the importance workplace interactions can have on workplace belongingness experienced by novice nurses, which can have a considerable influence on not wanting to leave a healthcare organisation.

Keywords: healthcare, belongingness, feeling accepted, feeling competent, workplace belongingness, novice nurses, onboarding, interactions

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Introduction

The turnover among professional nurses is indicated as a global healthcare-system problem (Hyrkas & Morton, 2013; Chen et al., 2021). Economic and populational growth with demographic and epidemiological transitions will cause an intense demand for nurses in the coming decades while shortages already occur (WHO, 2015). Thereby, the current COVID-19 pandemic results in increased turnover intention and a greater requirement of nurses (Labrague & De Los Santos, 2020; Cole et al., 2021; Falatah, 2021). According to the WHO (2016), preventing the turnover of nursing professionals should be one of the priorities of healthcare policies.

Scientific literature revealed evidence that insufficient onboarding processes within healthcare organisations could lead to turnover in newly hired employees (Krasman, 2015). Onboarding is an effort on the part of the organisation to enhance the adjustment of new employees into the workplace through programs, policies, or activities (Bauer et al., 2007; Klein & Polin, 2015). Insufficient onboarding practices can be seen as poor socialization activities in which newcomers feel isolated within the team, fail to gain self-confidence and lack a sense of purpose (Bauer & Erdogan, as cited in Shufutinsky & Cox, 2019). Thereby, insufficient onboarding is activities or programs oriented to the organisation more than the employee (Nobel, 2013). According to the WHO, these deficient onboarding practices are problematic because the worldwide healthcare sector suffers from a shortage of healthcare personnel (Nursing and midwifery, 2020). A pursued problem of insufficient onboarding is the costs when new employees leave the organisation because, for example, onboarding processes need to be repeated (Kurnat-Thoma et al., 2017). Hence, poor onboarding leads to a high turnover rate in nurses and thus results in affecting the primary function of providing safe, quality-driven healthcare to patients (Nowak et al., 2010; Needleman et al., 2011). A successfully implemented onboarding process can improve employee retention, time to productivity, manager satisfaction, and employees who experience job satisfaction and organisational commitment (Maksymiuk, 2017).

Other studies indicated that novice nurses, notably after they graduated, left their first job in a healthcare organisation after no more than two years (Bowles & Candela, 2005; Newhouse et al., 2007; Brewer et al., 2011). An advisory rapport to the Dutch cabinet in 2020 also stated

that despite the many recruitments of novice nurses, especially young care workers are leaving the healthcare organisation after no more than two years (Raad voor Volksgezondheid & Samenleving, 2020). Therefore, it can be assumed that the first period as a novice nurse is vital for staying in a healthcare organisation.

A recent study conducted among novice nurses revealed that a feeling of not belonging was one of the factors that could explain an early drop-out of novice nurses in The Netherlands (Kox et al., 2020). Another research among Dutch novice nurses also emphasised the importance of relatedness (the need to feel a sense of belonging and attachment) during the start of a new nursing job (Ten Hoeve et al., 2018). The sense of belonging within an organisation is evoked through interactions with coworkers (Mohamed et al., 2013). Previous studies also indicated that acceptance boosts someone's feeling to be part of a group (McMillan & Chavis, 1986). The same goes for the feeling of being competent, which enhances the feeling of being committed to an organisation (Karatepe et al., 2018). A sense of belonging positively affects the transition of novice nurses into well-integrated professionals (Van Rooyen et al., 2018) and job satisfaction (Winter-Collins & McDaniel, 2000), which in turn results in countering turnover (Kuo et al., 2013). Sense of belonging is also a factor enhancing psychological well-being among nurses so that eventually, dropout caused by psychological problems could be prevented (Sargent et al., 2002). Therefore, it is suggested that a high sense of belonging evoked by acceptance and competence might counteract novice nurses' early drop-outs.

As far as is known, previous studies did not consider daily feelings of acceptance, competence, and belongingness influenced by natural interactions between colleagues on the first days of a nurse's new job. Including, besides person-level data, the day-level data can give an essential overview of which part of the effect is explained by the differences between participants. These feelings could fluctuate each day due to being influenced by, for example, the context or interaction partner. That is why this study conducted a daily diary study to take into account these fluctuating feelings after work floor interactions as our behaviour can differ from day to day (Ohly et al., 2010). Therefore, this study will fill this scientific gap to investigate the effects of feeling accepted and competent as evoked by daily workplace interactions on workplace belongingness among Dutch novice health employees during their first three months of practice. These findings can guide healthcare organisations in defining a policy in preventing early turnover among novice nurses.

Theoretical framework

This section gives guidance in getting a helpful overview of the concepts central to this research. First, workplace belongingness and the importance of interactions on developing workplace belongingness will be discussed. After that, the significant role workplace belongingness might have in preventing turnover among novice nurses will be described. It ends with explaining the concepts of feeling accepted, competent, and the context from which the hypotheses logically will flow. After the theoretical framework, a summary and an overview of the research model will be presented.

Workplace belongingness and its relation with workplace interactions

The feeling of being part of a group shapes the sense of belongingness (Levett-Jones et al., 2009). Research by Levett-Jones et al. (2007) showed that the sense of belonging is an essential factor in supporting human motivation. Belonging is conceptualised from psychological, social, physiological, and spiritual dimensions. The psychological element can be described as a sense of belonging (Hagerty et al., 1992). A sense of belonging can be defined as an experience in which an individual feels itself an integral and accepted part of a system. The concept sense of belonging can be divided among two elements: first is the valued element in which the individual feels valued, needed, accepted, feeling secure, included, and respected (Hagerty et al., 1992; Hagerty & Patusky, 1995; Baumeister & Leary, 1995; Levett-Jones & Lathlean, 2008). The second dimension is fit: the characteristics, perceptions, or values that are already settled within the individual are in harmony with a system or group (Hagerty et al., 1992; Hagerty & Patusky, 1995). As the scope of this study lies on interpreting the feelings being accepted and competent within an individual after an interaction and not on values featured by the individual that may fit with the organisation, this study will focus on the first dimension.

More specifically, Cockshaw and Shochet (2010) described workplace belongingness the same way as a sense of belonging plus being engaged by co-workers in a work environment. Enhancing a sense of belonging on the work floor is based upon socialisation between employees within a particular work environment (Hagerty et al., 1992; Cockshaw & Shochet, 2010). Based on these indicated studies, a sense of belonging on the work floor is conceptualised as a feeling to be an integral part of an organisation. This feeling could be realised due to the awareness of being valued, secure, accepted, included, and respected within an organisation whose values and

characteristics are in harmony with an individual. What follows next is the focus on workplace interactions, as it was already noticed that social interactions seem to impact workplace belongingness. From now on, the term workplace belongingness will, in most cases, be used since this concept is more appropriate to the context of this research.

Baumeister and Leary (1995) indicated that people regularly look for active and positive interactions, which are basic human needs. Whether an individual feels at home in an environment is determined by the intensity of the interrelations in that environment (Winter-Collins & McDaniel, 2000). Enhancing workplace belongingness is dependent on the interactive, social relationship between the related individual and individuals which embody a system or organisation (Hagerty et al., 1992; Cockshaw & Shochet, 2010; Mohamed et al., 2013; Jena & Pradhan, 2018). Bradbury and Lichtenstein (2000) stated that the social bonds with other employees like mentors, colleagues, or friends are the basis of the feeling of who we are and thus is shaped by the social interactions within an organisation. A study among student nurses concluded that workplace belongingness demands the realisation of peer interactions and is a fundamental predictor of active learning and development (Walker et al., 2014). Another study stated that interpersonal and daily interactions between RNs (registered nurses) and nursing students could contribute to a sense of belonging in the workplace (Levett-Jones et al., 2009). Interactions with RNs that provide a safe place where a person could feel valued and secure enhanced a feeling of being supported (Levett-Jones et al., 2009). Based upon the aforementioned research, it is assumed that the influence of workplace interactions between colleagues has a sufficient influence and is a critical component to enhancing workplace belongingness

Workplace belongingness and its importance to prevent turnover among novice nurses

Previous research showed that workplace belongingness could positively affect job satisfaction which in turn positively affects job retention (Winters-Collins & McDaniel, 2000; Cho et al., 2012). So, it seems very likely to assume that workplace belongingness positively influences job satisfaction, which in turn is a possible mediator in preventing turnover. Thereby, it was already stated that there was sufficient evidence that the absence of belonging could lead to direct dropouts among novice nurses within the healthcare sector (Brewer et al., 2011; Newhouse et al., 2017; Kox et al. 2020). It is also stated that nursing students' sense of belonging

influences workplace satisfaction (Borrot et al., 2016) which could also have a positive effect on the motivation to learn (Levett-Jones & Lathlean, 2008; Levett-Jones et al., 2009; Walker et al., 2014). In addition, Grobecker (2016) also indicated that a sense of belonging among nursing students in clinical placements positively impacted students' motivation and learning. This positive trigger to workplace learning could again positively influence choosing the nursing profession and eventually staying in the healthcare sector over the longer term (Levett-Jones et al., 2009). So, it may well be logical to consider that the possibility of developing and learning as evoked by a sense of belonging could be a predictor of wanting to stay somewhere. Based upon these findings, it could be stated that workplace belongingness has proven to be a vital influencer on turnover. To maintain a manageable focus in this study, the mediating variables of job satisfaction and workplace learning in preventing turnover are not included. Nonetheless, the importance of workplace belongingness to prevent turnover is very likely to be plausible.

Perceptions during workplace interactions

Feeling accepted

People have the basic need to be accepted if they join in interpersonal interactions with others (Baumeister, 1982). According to McMillan and Chavis (1986), enhancing a sense of belonging involves the feeling of being accepted by an individual or group. This component is especially reported in the healthcare context by Mohamed et al. (2013). They stated that the feeling of being accepted is an effector on developing a sense of belonging among registered nurses. In addition, this concept has also been mentioned in several studies in the context of nursing students who were doing their placements. It was stated that the feeling of being accepted is a vital construct to enhance the sense of belonging among clinical placements (Walker et al., 2014; Levett-Jones & Lathlean, 2008). The feeling of being accepted and included is especially important for minorities who want to join a majority embodied by a new group or organisation. They have the greatest urge to want to be accepted (Jasini et al., 2018). Based upon these previous studies and the already indicated importance of workplace interactions concerning workplace belongingness, it is very likely to assume that novice nurses who feel accepted during workplace interactions also gain a greater sense of workplace belongingness. It seems justified to propose the first hypothesis:

Hypothesis 1: it is expected that on days when newly registered nurses experience a stronger feeling of being accepted, they experience a higher level of workplace belongingness.

Feeling competent

Another component that seems to influence a sense of belonging is the feeling of being sufficiently competent. To enhance a feeling of being competent, an individual experiences self-efficacy, receives sufficient meaningful work, and is given enough space to develop (Garrels & Sigstad, 2019). According to Hazari et al. (2020), a sufficient feeling of competence positively affects belongingness. Mattila et al. (2010) stated that student nurses in clinical practice who experienced no acknowledgement in demonstrating their competence did feel subordinated, resulting in resistance to start a new day in clinical practice. In addition, the feeling of being competent in something influences the strength and type of psychological well-being and motivation of an individual, which in turn has a significant impact on analytical performance and healthier behaviour in a wide range of activities (Deci & Ryan, 2008). Jobs that create competence in an employee would boost motivation and thus enhance engagement in the workplace (Karatepe et al., 2018). Taking these findings into account, it is very likely to assume that the feeling of being competent during interactions with colleagues will ensure a higher sense of workplace belongingness among novice nurses. Therefore, the second hypothesis is proposed:

Hypothesis 2: It is expected that on days when newly registered nurses experience a stronger feeling of being competent, they experience a higher level of workplace belongingness.

Context

Every interaction includes a different context that could affect the interaction between peers. This research studies the difference between the following two contexts: real-life face-to-face interactions and digital interactions. It is clear that digital developments in healthcare are piling up at a rapid pace. Digital tools such as smartphones are also used extensively by nurses during their work to communicate with colleagues in order to improve, for example, patient care (De Jong et al., 2020). However, it is stated that a real-life person-to-person interaction with colleagues ensures a higher degree of social belongingness towards an environment compared to

digital interactions (Sacco & Ismail, 2014). In addition, Schiffrin et al. (2010) concluded that interactions on a face-to-face level had a positive impact on someone's well-being compared to an interaction mediated by a digital tool which resulted in a decrease in well-being. Developing a valued relationship with colleagues in a team is particularly problematic when this has to be done during digital interactions rather than communication in a physical environment (Zimmerman, 2011). Thereby, it is very likely to assume that new employees would like to have physical interactions above digital interactions during their onboarding period to be more likely to feel a higher degree of workplace belongingness within an organisation. Especially during the COVID-19 period, individuals are supported to communicate through digital devices to avoid as many social contacts as possible. That is why it seems very interesting to include this context as a control variable. Based upon this reasoning, the last hypothesis is proposed as we also assume that not all interactions with co-workers will take place digitally:

Hypothesis 3: It is expected that when newcomers' most important interactions with colleagues took place face-to-face, they experience a higher level of workplace belongingness on that day relative to nurses with digital interactions.

The present study

This research will investigate the effects of the feeling of being accepted and competent as evoked by daily workplace interactions on the level of workplace belongingness among novice nurses during their first three months of practice. In addition, the effects of the interactions' context on workplace belongingness are also investigated.

Previous studies around the world focused mainly on identifying the factors that may affect a sense of belonging and the importance of interactions among nursing students (Levett-Jones et al., 2007; Levett-Jones et al., 2009; Levett-Jones & Lathlean, 2008; Ashktorab et al., 2017) and already registered nurses (Hagerty et al., 1992; Mohamed et al., 2013). In these previous studies, the focus was also on which factors were influenced by a sense of belonging, such as job satisfaction (Winter-Collins & McDaniel, 2000; Borrott et al., 2016), psychological factors (Sargent et al., 2002; Grobecker, 2016; Shakespeare-Finch & Daley, 2017) and eventually turnover (Van Rooyen et al., 2018; Kox et al., 2020). These studies were mainly qualitative interviews rather than quantitative research that could establish statistical support in

determining significant correlations. One study in the context of healthcare did mention a sense of belonging in a longitudinal, qualitative, diary study in which the importance of a sense of belonging within novice nurses was indicated (Ten Hoeve et al., 2018).

However, as far as is known, there is a lack of empirical insight into the daily measurement of changing perceptions experienced after interactions that could affect workplace belongingness in the first days of newly hired nurses. Second, the focus of previous studies in the healthcare context has been primarily on nursing students, newly graduated nurses, or professional nurses. This study will focus mainly on novice nurses, regardless of being recently graduated. Third, the scientific literature lacks a specific focus on the novice nurses in the VVT-sector in the Netherlands. This study will specify its focus on a Dutch healthcare organisation in the VVT-sector. Fourth, in previous studies, the focus was mainly on concluding that interactions in the workplace could lead to a higher sense of belonging, but not in which capacity these interactions took place. This study will focus on the interactions' contextual factors.

Therefore, this study adds several new dimensions to scientific research when studying the effects of the perceptions experienced during daily workplace interactions by novice nurses on workplace belongingness in the Dutch VVT-sector. The outcomes of this research can contribute to healthcare organisations, and more specifically the VVT-sector, in providing insights into which and what kind of daily interactions on the work floor could influence novice nurses' workplace belongingness within a healthcare organisation. These understandings can guide healthcare organisations in defining a strategy to prevent early turnover among novice nurses.

Research question and model

In this research, the following research question will be addressed: what are the effects of the feeling of being accepted and competent as evoked by daily workplace interactions between healthcare professionals on the level of workplace belongingness among novice health employees in the Dutch VVT-sector? Thereby, the effect of the interactions' context on the level of workplace belongingness was also taken into account. The hypotheses, as described in the theoretical framework, were tested to answer the research question. What follows is a quick summary and overview of the research model that can be observed in figure 1.

Based upon the before-mentioned literature, it is assumed that interactions that evoke the feeling of being accepted (IV1) and competent (IV2) could result in a higher sense of workplace belongingness (DV). It is also very likely that the context of the interaction has an effect on the dependent variable (DV). The context variable is interpreted as a face-to-face or digital interaction and taken into account as a control variable. An overview of the research model can be observed in figure 1.

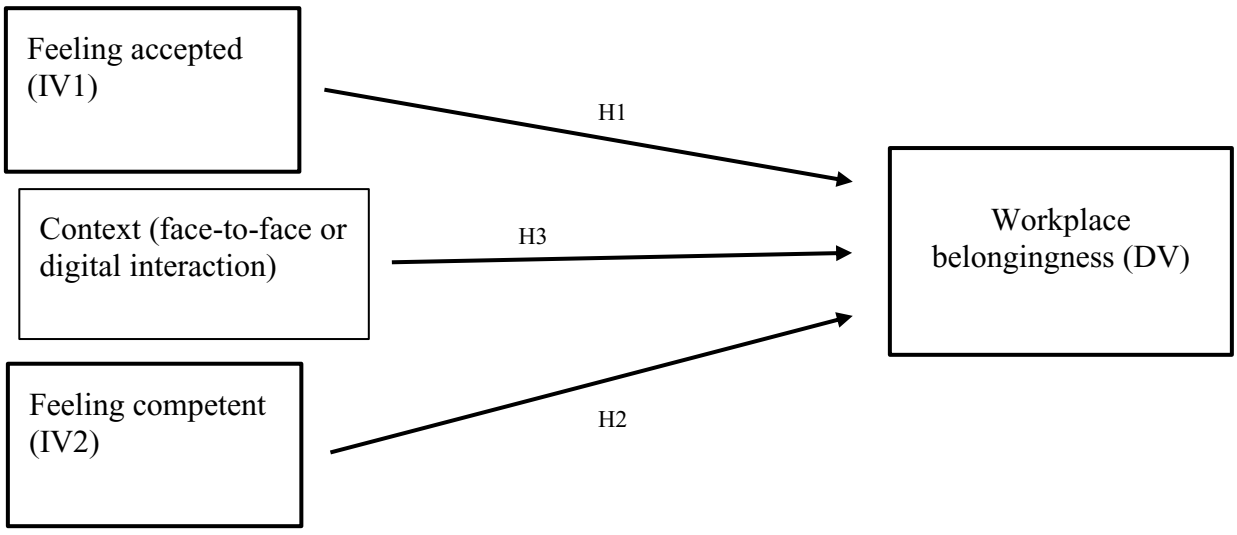

Figure 1 Research model

Method

Research design

As this study investigates the changing feelings of acceptance, competence, and workplace belongingness measured over time, it is reasonable to implement a longitudinal diary study as diary studies are designed to gather the constantly fluctuating feelings and behaviours during a natural day's work (Ohly et al., 2010). Thereby, diary studies have the advantage of measuring feelings in real-life situations (Ten Hoeve et al., 2018). Applying research in a real-life situation enhances ecological validity, which results in generalizability towards situations where the effect occurs naturally (Hall et al., 2018). So it is assumed that in this research, the assumed daily fluctuating circumstances during an interaction can be included by using this diary study. This implies that data from different individuals on ever-changing contexts per day can be measured (Ohly et al., 2010).

The importance of collecting data from interactions in naturally occurring work contexts is significant because, for example, feelings can be tested based on real-life rather than laboratory environments and thus has greater practical value (Ebner-Priemer & Kubiak, 2007). Diary studies also reduce the retrospective bias. This bias affects validity because participators sometimes have to describe a feeling or event that happened weeks ago when the memory might have already let the participant down. A diary study prevents this from happening. It allows the participants to describe their experience of a particular event on the same day (Reis & Gable, as cited in Ohly et al., 2010).

In addition, diary studies provide insight into the short-term dynamics of particular experiences within and between individuals (Ohly et al., 2010). The within-person approach includes the character variations between individuals in the study. It measures the extent to which an individual's feelings change over time. It measures the mean of variation for the average individual in the study (e.g. “on days when novice nurses experience a high level of feeling accepted after an interaction, they may experience a higher sense of workplace belongingness”). The between individuals approach examines whether individuals differ on the dependent variable relative to the independent variable. This is usually expressed as an "on average" line representing all participants (e.g. “novice nurses who in general feel accepted, do experience a higher sense of workplace belongingness”) (Hamaker, 2012).

Hamaker indicates that "what applies in aggregate is not necessarily informative on what

is true in general, where the latter implies it is true for every individual in the population" (Hamaker, 2012, p.2-3). A within-person approach is used in this study because variables can change over time depending on dynamic contextual and characteristic factors. A within- and between-person approach ensures insight into how much variance between the independent and dependent variables can be explained by discrepancies between participants and how much can be explained by discrepancies within participants. While conducting the daily diary study, quantitative data was collected. This data is collected based upon a restricted random sampling size as every new employee was approached to participate in this study.

Participants

Participants included healthcare employees who started their new job at a healthcare organisation in the Dutch VVT-sector. The data was collected in a VVT organisation in The Netherlands. The data was collected in the months April 2021 until July 2021. The sample included all available new employees starting in April and May 2021. A total of eleven of these new employees accepted to participate in the study. Two of them did not complete the daily and weekly questions entirely and returned to their former job. Nevertheless, these two participants were able to complete the end questionnaire. After eight weeks, one participant quit the study and did not fill in the end questionnaire.

From the eight participants who started in April, all participants forgot to fill in one or more questionnaires related to the variables measured daily. Also, among the four participants who started in May, all failed to complete a number of days with a range of at least 3 to a maximum of 7 days that concerned the daily measured variables. This was caused by a failure that occurred in the TIIM application. A great deal of effort was required from the researcher to get these participants back on track because a new study had to be created within the TIIM application, for which the participants had to sign up again. One missed daily questionnaire by a participant indicates that the variables feeling accepted, competent, workplace belongingness, and the context were not measured as no interaction was identified. An overview of the completed responses is shown in table 1.

Participants ranged in age from 22 to 58 years (M = 39.18 years, SD = 11.97). All 11 participants had Dutch nationality. The educational level of all participants is made upon secondary education (N = 2, 18.18%), secondary vocational education level 1 (N = 2, 18.18%), secondary vocational education level 2 (N = 2, 18.18%), secondary vocational education level 3

(*N* = 2, 18.18%), secondary vocational education level 4 (*N* = 1, 9.09%), and university of applied sciences (*N* = 2, 18.18%). The participants had an average of approximately 12 years of working experience (*M* = 11.55, *SD* = 8.96)The majority of the participants held their positions at a location in Enschede (*N* = 6, 54.55%), followed by Haaksbergen (*N* = 3, 27.27%) and Neede (*N* = 1, 9.09%). An overview of the participants' measurements are given in table 1.

Table 1
Completed measurements per participant

Participant	Starting period	Completed daily questionnaires	Response rate daily questionnaires	Start questionnaire
301	April	10/13	77%	X
302	April	16/20	85%	X
303	April	11/16	80%	X
304	April	12/15	80%	X
305	April	10/13	77%	X
306	April	18/19	95%	X
307	April	16/17	94%	X
308	May	7/14	50%	X
309	May	9/15	60%	X
310	May	8/13	62%	X
311	May	16/19	75%	X

The recruitment of participants was accomplished by contacting the HR department of the healthcare organisation. The HR department established a list of newcomers that started their new job in April and May 2021. Due to time constraints, no newly hired employees that began their new job after May 2021 were included in this research. This list was communicated to the researcher. The researcher also received telephone numbers and e-mail addresses of the participants to receive a phone call from the researcher to schedule an intake meeting in Microsoft Teams. Participants were regularly contacted via phone or WhatsApp as extra support to complete the study. In addition, after one month, a postcard with a thank you text and chocolate was sent to the participants as an encouragement to finish the questionnaires.

By allowing as many participants as possible to participate, the sampling of the participants included everyone with a nursing function that started their new job in April and

May. It is worth indicating that seven can be classified as professional nurses, whereas three are marked as ‘employees beautiful day,’ who intend to develop into professional nurses. One participant is indicated as a basic doctor, which can be described as a general practitioner for several nursing home locations. So, eight participants can be classified as novice nurses, and three are marked as future professionals in nursing. This research was based upon previous research that focused mainly on professional nurses, whereas, in this study, not every participant can be named a professional nurse already.

Procedure

Participants started the study by doing an intake interview with the researcher. After that, they filled in a start questionnaire, after which they filled out the daily questionnaire for each workday within three in sequence weeks. Subsequently, a weekly questionnaire for six consecutive weeks was administered, after which the questionnaires were completed with an end questionnaire. Before an intake interview took place, an e-mail was sent to the participants who the HR department had put forward. This e-mail contains information about the study and a guide to download the application used during this study.

Every new employee who wanted to participate in the study and started their job in April or May attended an intake interview of about 20 minutes through Microsoft Teams. The COVID-19 situation did not allow for physical contact with the participants. The intake interview was done one week before starting the new job. This was done to get acquainted with the participant and gather background information (e.g. educational background, work experience). In addition, the goal of the study and the confidentiality of the participants' data was explained. When the participant agreed to participate in the study, the application was downloaded. An account was created in cooperation with the researcher, or the option was given to do it by themselves when the participant felt confident enough about doing so. After this, the starting questionnaire of about 15 minutes was prepared in the application for the participant to start with.

During the first week of the participant's new job, a practice module of about 5 minutes was prepared to indicate what the daily and weekly questionnaires would look like. This first week was used for this purpose so that the participants also had enough time to complete the starting questionnaire when they were unable to find time for this at the initial stage.

On the first working day of the second week, the first daily questionnaire was prepared in the application for the participant. This was followed by a daily questionnaire every working day

for three consecutive weeks. These questionnaires took no more than 5 minutes to complete. The daily questionnaire became available in the application one hour before the end of the working day. When the daily questionnaire was ready, a notification was sent through the application to the participant stating that the questionnaire was ready. If the questionnaire was not completed, a push notification was sent two hours after the questionnaire was ready, and the participant was asked friendly to complete it. These daily questionnaires were completed on random working days (Monday to Sunday) as the healthcare consists of irregular working days and hours. Therefore, the researcher prepared for every participant the questionnaires manually in the application. By the end of the fourth week, the researcher contacted the participants to provide comments and ask questions. For the researcher, this was the opportunity to motivate the participants and announce the upcoming weekly questions in week 5.

Only weekly questions were presented to the participants in week five of this study. These weekly questions were prepared in the app every last working day of a participant's workweek. Again, this questionnaire became available one hour before the end of the workday with a reminder two hours after it became available. Furthermore, these weekly questions were also completed on random days because of the irregular working days of the participants.

Instrumentation

For this study, the TIIM-application was used for the start, daily, weekly, and end questionnaires. The TIIM is a software program developed by the BMS Lab of the University of Twente. This app is a research platform that can easily send daily or weekly questionnaires to participants who want to use their smartphones to complete the questionnaires.

Measures

Several constructs were monitored in this study. Although, only the constructs relevant to the research questions were included in this clarification. All constructs were measured during the daily questionnaires. Only the demographic variables were measured during the start questionnaire. The start questionnaire that measured these variables was sent a week before the first round of daily questions to enhance the participants' willingness because this survey is

Table 2

Information sources used to measure studied and demographic variables

Variables	Start questionnaire	Daily questionnaires
Demographics	X	
Feeling of acceptance		X
Feeling competent		X
Context		X
Workplace belongingness		X

something more extensive than the daily questionnaire. Combining these on day one takes far more time and could demotivate the participants (Ohly et al., 2010). The daily survey took approximately 4-6 minutes to fill in. In this regard, a low number of items per variable is chosen to accommodate this time issue. Table 2 provides an outline of which constructs were measured by each tool.

One-time measures

The one-time measurements in this study included the start questionnaire. The starting questionnaire provided demographic data such as age, nationality, and work experience in years.

Daily measures

The daily measurements included the daily questionnaires, which provided the data for feeling accepted, competent, the context, and workplace belongingness. The feeling of being accepted was measured by using a 5-point Likert scale (1 = not at all, 5 = totally). Based upon Hall et al. (2018), the following three items were used: “During this interaction, my conversation partner(s) was/are friendly”, “During this interaction, I felt accepted by my interaction partner(s)” and “During this interaction, I was listened to”.

A 5-point Likert scale (1 = not at all, 5 = totally) was also used to measure the feeling of being competent. The following two items were derived from Hall et al. (2015): “During this interaction, I felt that my interlocutor(s) found me competent” and “I felt that my interlocutor(s) found my contribution useful”.

Third, workplace belongingness was measured based on three items adopted from the Institutional Belonging Scale (Mendoza-Dentonet al., 2002; London et al., 2011; Veldman et al., 2020). A 5-point Likert scale was used (1 = not at all, 5 = totally). The adopted items were:

"Today I did/did not feel at home with the organisation", "Today I felt like I didn't fit in well with the organisation/good fit with the organisation", and "Today I felt very incompetent/very competent". The context was also measured during the daily questionnaire by participants labelling the interaction as a physical face-to-face conversation or digital interaction.

Reliability check

To measure the internal consistency between items and thus enhance the reliability of the variables feeling accepted, feeling competent, and workplace belongingness, two different reliability checks were performed as analysing reliabilities within varying levels of analysis (daily and person-level) should be estimated independently (Bonito et al., 2012; Nezlek, 2017). This study first conducted a multilevel model analysis on the daily variables, whereupon a daily- and person-level reliability check was performed. During the multilevel model analysis of the daily variables, the items were the level one unit of analysis, the days covered the level two unit of analysis, and the participants were the level three unit of analysis. The estimated variances per level were used to calculate the reliability at the daily and individual levels. To calculate the reliability, the formulas described by Bonito et al. (2012, p. 449) were adapted and modified to the context of this study. The original multilevel structure used by Bonito et al. (2012, p. 449) is about individuals (level 1) within groups (level 2). Figures 2 and 3 show the original formulas. The measurements of this research are about days (level 1) within individuals (level 2). Figure 4 shows the modified procedure to calculate the reliability on a daily level, whereas figure 5 shows the modified formula used to calculate the person-level reliability. Within the formula for the person level, *n* was perceived as the average amount of measures for each participant. In addition, *p* meant the number of items per scale.

$$\alpha_i = \frac{\sigma^2_{individual}}{\sigma^2_{individual} + \frac{\sigma^2_{item}}{p}}$$

Figure 2 Original formula for individual-level reliability adapted from Bonito et al. (2012, p. 449)

$$\alpha_g = \frac{\sigma^2_{group}}{\sigma^2_{group} + \frac{\sigma^2_{individual}}{n} + \frac{\sigma^2_{item}}{p*n}}$$

Figure 3 Original formula for group-level reliability adapted from Bonito et al. (2012, p. 449)

$$\alpha_d = \frac{\sigma^2_{daily}}{\sigma^2_{daily} + \frac{\sigma^2_{scale}}{p}}$$

Figure 4 Modified formula to calculate daily-level reliability

$$\alpha_i = \frac{\sigma^2_{individual}}{\sigma^2_{individual} + \frac{\sigma^2_{daily}}{n} + \frac{\sigma^2_{scale}}{p*n}}$$

Figure 5 Modified formula to calculate person-level reliability

The reliability for the variable feeling accepted was calculated with all three items (n = 12.09 and p = 3). The multilevel model analyses in SPSS revealed σ^2_{scale}= 62.32, σ^2_{daily}= 12.54, and $\sigma^2_{individual}$ = 24.35. The formula from Bonito et al. (2012) found a reliability of 0.38 on daily level and a reliability of 0.90 on person level.

The reliability for the variable feeling competent was calculated with two items (n = 12.09 and p = 2). The multilevel model analyses in SPSS revealed σ^2_{scale}= 66.33, σ^2_{daily}= 2.18, and $\sigma^2_{individual}$ = 25.99. The formula from Bonito et al. (2012) found a reliability of 0.06 on daily level and a reliability of 0.90 on person level.

The reliability for the variable workplace belongingness was also calculated with three items (n = 12.09 and p = 3). The multilevel model analyses in SPSS revealed σ^2_{scale}= 28.25, σ^2_{daily}= 0.51, and $\sigma^2_{individual}$ = 36.15. The formula from Bonito et al. (2012) found reliability of 0.05 on a daily level and reliability of 0.98 on a person level.

According to the standardised assessment criteria, the reliability for each variable on person-level could be considered as sufficiently high enough. On the other hand, the reliabilities on a daily level can be regarded as low. Nevertheless, according to Nezlek (2017), more flexible

standards can be adopted in this case due to the low amount of items per scale. In addition, it is currently unclear what to do when one level is reliable and the other is not (Bonito et al., 2012). Taking this all into account, all three variables are treated as reliable.

Data analysis

After conducting the daily diary study, the data was analysed via inferential statistics in IBM SPSS Statistics. A random multilevel modelling design (days nested within-persons) was conducted as the observations at one level (daily measurements) are nested within measurements at a higher level of analysis (participants) (Nezlek, 2012). A maximum likelihood estimation is performed within this multilevel model design. The multilevel model in this research is based upon a day-level (within-person) and person-level (between-person) outcome. To estimate these outcomes, the person mean-centred data from the daily dataset was used for the day-level outcomes. The person-level outcomes were calculated using the grand mean-centred data, also from the daily dataset.

To make it a little more specific, the data in the context of this study had to be set right before exploring the daily- and person-level effect on workplace belongingness. At the day-level, the used predictors were feeling accepted, feeling competent, context, and having a sense of workplace belongingness. The independent variables feeling accepted, feeling competent, and context were person-mean centred on comparing the individual differences of the participants for each day with the overall person-mean score by transforming the mean rating of each participant across all days to zero. By doing the multilevel test on person-level, the variables feeling accepted and feeling competent were admitted as a grand-mean centred so that the mean across all participants was zero. The dependent variable workplace belongingness was in both tests included in terms of the overall mean score.

The following steps describe the practical actions that were taken to perform the multilevel analysis with the prepared data described above. Both the day-level and person-level effects between feeling accepted or competent and a sense of workplace belongingness were examined by using the four steps from Aguinis et al. (2013) as a basis. The day-level effect of context on workplace belongingness was also estimated within these steps. This study did not include level two variables; only the first two steps from Aguinis were adapted. An overview of how these steps were acquired and customised to meet this research are shown in table 4. Before starting the multilevel model analysis, the first step was to calculate the intraclass correlation

(ICC) by adapting a null model. Calculating the ICC can determine how much of the variance can be explained by discrepancies between persons. A high rating informs us that differences between persons can explain a substantial part of the variance.

Step two was to create a random intercept and fixed slope model (RIFSM) to test to what extent the within (daily-level) effects of the feeling of being accepted, competent, or context do have on workplace belongingness. This is because it is expected that the feeling of acceptance, competence, or context may have different effects on workplace belongingness for each individual. In addition, it was also investigated if there was an in-between (person-level) effect of the feeling of being accepted or competent on workplace belongingness. Testing this person- and day-level data gave an essential overview of which part of the variance was explained by the discrepancies within participants and discrepancies between participants.

When applying this RIFSM-model, different constructs were added to the model to see if the added constructs caused a significant change in the correlation between the previously applied variable and workplace belongingness. First, the effect of the control variable context on workplace belongingness was investigated (step 2a). When the analysis revealed that the context was not significant as a control variable, it was not further incorporated into the full model with acceptance and competence in it. In step 2b, the variable feeling accepted was added separately to examine the effect on workplace belongingness. The next step (step 2c) included only the independent variable feeling competent to test the effect on workplace belongingness. To investigate which of the two main variables had the most significant impact on workplace belongingness, both constructs of feeling accepted and competent were added to the model simultaneously (step 2d).

Results

The first things that will be shown are descriptive statistics. Next, the ICC for each day-level variable will be explained. Second, the possible effect between context and workplace belongingness will be described. After that, the results of the multilevel analysis on hypotheses one and two will be explained: on days when newly registered nurses experience a stronger feeling of being accepted or competent, they experience a higher level of workplace belongingness.

Descriptive statistics

Table 3 shows the standard deviation and means for all the studied variables and demographic variables. In doing so, the correlations between all variables at the person level are also presented. There is also a significant correlation at the person level noticed between feeling accepted and competent with a sense of belonging in this tabulation.

Table 3

Means (M), Standard Deviations (SD), and Correlations between studied and demographic variables

Variables	M	SD	1	2	3	4	5	6	7	8
1 Age	39.18	11.97	-							
2 Level of education	2.36	1.86	-0.18	-						
3 Experience in years	11.55	8.96	0.66*	-0.54	-					
4 Professional identity	4.97	0.62	-0.06	0.07	0.34	-				
5 Feeling accepted	4.15	0.55	-0.07	0.23	0.11	0.17	-			
6 Feeling competent	3.93	0.57	0.11	-0.33	0.44	0.26	0.82**	-		
7 Sense of belonging	3.80	0.64	0.17	-0.56	0.49	0.28	0.71*	0.71*	-	
8 Context	0.26	0.30	0.18	0.42	-0.04	-0.16	0.63*	-0.60	-0.53	-

*p < 0.05 **p < 0.01

Intraclass correlation (ICC)

By calculating the ICC, the first step from Aguinis et al. (2013) was used. The between-person variance was estimated from the variables workplace belongingness, feeling accepted, and competence. As already mentioned, a high ICC score indicates that the variance of a variable can be explained to a greater degree by the between-person differences. So a lower score indicates that the within-person differences can explain more of the variance. When calculating the ICC for workplace belongingness, the outcome was 0.69, indicating that 31% of the variance could be explained within the participants. For both the feeling accepted and competent, the ICC was estimated at 0.23 and 0.29, indicating that most of the variance of these variables can be explained within the participants. Hence, a multilevel modelling design is justified based on these ICC scores.

It is expected that when newcomers' most important interactions with colleagues took place face-to-face, they experience a higher level of workplace belongingness on that day relative to nurses with digital interactions.

It was predicted that novice nurses whose interactions took place face-to-face resulted in a higher level of workplace belongingness relative to nurses with digital conversations. Step 2a in Table 4 showed that no statistical support was found to consider that this hypothesis should be legit (B = -0.05, p = 0.383). Since no significant effect with workplace belongingness was found for this control variable, it is no longer included in the subsequent analyses.

It is expected that on days when newly registered nurses experience a stronger feeling of being accepted, they experience a higher level of workplace belongingness.

Based upon step 2b in Table 4, it can be stated that, as expected, hypothesis one is supported. In this case, a between-individual effect and within-individual effect was found. On days when newly registered nurses felt accepted after an interaction, they experienced higher workplace belongingness (B = 0.12, p < 0.010). In addition, newly registered nurses who in general felt accepted after an interaction with a colleague did feel in general higher workplace belongingness (B = 0.83, p < 0.006).

It is expected that on days when newly registered nurses experience a stronger feeling of being competent, they experience a higher level of workplace belongingness.

Based upon step 2c in Table 4, hypothesis two was also supported: on days when newly registered nurses felt being competent after a conversation, they also experienced higher workplace belongingness ($B = 0.11$, $p < 0.018$). Thereby, nurses who in general felt a feeling of being competent after a conversation did also feel in general a higher sense of workplace belongingness ($B = 0.80$, $p < 0.006$).

Additionally, the variables feeling accepted and competence were added simultaneously to investigate which of the two main variables had the greatest effect on workplace belongingness on both person- and daily-level. The outcomes in Table 6 are showing no statistically significant effects for both the feeling of acceptance (within-individual level: $B = 0.09$, $p = 0.278$; between-individual level: $B = 0.45$, $p = 0.298$) and competence (within-individual level: $B = 0.04$, $p = 0.645$; between-individual level: $B = 0.45$, $p = 0.273$).

Table 4

Results of the within and between-person effects of feeling accepted on workplace belongingness and the within-person effect of the context.

	Model				
	Null-model (step 1)	RIFSM (Step 2a)	RIFSM (step 2b)	RIFSM (step 2c)	RIFSM (step 2d)
Level and Variable					
Level 1					
Intercept	3.806** ($p < 0.01$)	3.800** (p < 0,01)	3.811** (p < 0.01)	3.807** (p < 0.01)	3.810** (p < 0.01)
Context (within)		-0.047 (0.383)			
Feeling accepted (within)			0.115* (0.010)		0.085 (0.278)
Feeling accepted (between)			0.833** (0.006)		0.447 (0.298)
Feeling competent (within)				0.112* (0.018)	0.038 (0.645)
Feeling competent (between)				0.802** (0.006)	0.452 (0.273)
Variance components					
Within-person (L1) variance	0.356	0.363	0.170	0.167	0.188
Additional information					
ICC	0.686				
-2 log-likelihood	169.599	167.065	155.260	156.107	153.793
Number of estimated parameters	3	4	5	5	7

*p < .05. **p < 0.01

Discussion

The focus of this research was to investigate the effects of feeling accepted and competent as evoked by daily workplace interactions on the level of workplace belongingness among Dutch novice health employees during their first three months of practice. To answer this issue, a longitudinal daily-diary questionnaire in a natural setting was conducted. This study method added significant new values regarding this topic. As far as the knowledge reaches, it is the first study that applied a daily-diary method specified to the first three months of newly hired nurses' interactions in the VVT-sector. The importance of focusing on the first period of a nurse in their new job is acknowledged by the WHO as insufficient onboarding practices could result in higher turnover among novice nurses (Nursing and midwifery, 2020). It is widely known that workplace interactions have a critical role in enhancing workplace belongingness (Hagerty et al., 1992; Cockshaw & Shochet, 2010; Mohamed et al., 2013; Jena & Pradhan, 2018) and thus in preventing turnover.

The findings of this research showed that on days that novice nurses felt accepted or competent after workplace interactions, they also felt a higher feeling of workplace belongingness. Thereby, when novice nurses felt, in general, a feeling of acceptance or competence after workplace interactions, they also experience in general a higher level of workplace belongingness. These findings are consistent with what was expected, as the hypotheses predicted that interactions during the first three months of practice that cue feelings of acceptance and competence could significantly affect workplace belongingness among novice nurses within the VVT-sector. A note should be made here because it may be assumed that these measurements were made daily when making a conclusion on day level. However, the first three weeks only had daily measurements. The following six weeks, the 'daily' measurement was done once a week and was also included in the overall data used for establishing conclusions.

It is therefore clear that the results of this study emphasise the collegial interactions during the first period of newly hired nurses such that they are significant in feeling belonged within a working environment (Hagerty et al., 1992; Cockshaw & Shochet, 2010; Mohamed et al., 2013; Jena & Pradhan, 2018). More specifically, it is clear and also in line with other studies that social interactions that create a feeling of acceptance (Walker et al., 2014; Levett-Jones &

Lathlean, 2008) and competence (Hazari et al., 2020) on specific days and in general do trigger workplace belongingness among novice nurses.

By bringing the main constructs feeling accepted and competence together in one model with workplace belongingness, it was also expected that one of the two constructs should have a higher effect. The outcomes showed no statistically significant effect on the within- and between individual level for both the feeling of acceptance and competence on workplace belongingness. Both variables became non-significant as a result of high p-values for both variables, which can be explained by the fact that both independent variables highly correlated with each other, as is shown in Table 3. This high correlation occurs as none of the variables explained the effect on workplace belongingness uniquely as there is some overlap. This resulted in increased standard errors, which in turn resulted in multicollinearity. Multicollinearity causes independent variables to become statistically non-significant while these constructs should be significant (Daoud, 2017). Nevertheless, it was expected that the total model would have been significant though. This non-significance can be explained by the relatively small sample size in this research and could be solved by increasing the sample size (Mason & Perreault, 1991).

In addition, it was also expected that the context in terms of face-to-face interactions or digital interactions would affect workplace belongingness after a conversation such that it is stronger among nurses with face-to-face interactions relative to nurses with digital interactions (Sacco & Ismail, 2014). Nevertheless, no effects were found in this study, which implies no differences in the level of workplace belongingness whenever an interaction was digital or face-to-face. An explanation for this could be that the employees experience the fast way of digital contact at any time and place also as a very pleasant way of communicating simply because it means that their colleagues are always available. It could result in faster problem solving or just a quick chat so that someone feels quickly involved in their working environment. This suggestion is more or less supported by Gabbiadini et al. (2020), who argue that because of the COVID-19 pandemic, people feel lonely due to significantly reduced social contacts. In examining it from this perspective, digital interactions could actually boost someone's belongingness within a certain environment as face-to-face conversations were restricted and not always allowed. Hence, it could be that the COVID-19 situation caused people to place as much value on digital interactions as it did on face-to-face interactions, which resulted in no significant findings in this research.

Strengths, limitations and future research

This study has several strengths, starting with the adaption of a daily diary study which collected data from interactions in naturally occurring work contexts, enhancing ecological validity. Feelings can be tested based on real-life rather than laboratory environments, thus having a greater practical value (Ebner-Priemer & Kubiak, 2007; Hall et al., 2018). Second, because of the daily, real-life measurements, the data from different individuals on ever-changing contexts per day were taken into account (Ohly et al., 2010). Third, diary studies also reduce the retrospective bias. This bias is known to affect validity because participators sometimes have to describe a feeling or event that happened weeks ago when the memory might have already let the participant down. A diary study prevents this from happening as it allows the participants to describe their experience of a particular event on the same day (Reis & Gable, as cited in Ohly et al., 2010). Fourth, many days were measured within persons, which resulted in lots of data entries for each participant. Fifth, the within-person approach was taken into account to estimate the variance that could be explained within the participants. This has a surplus value as the general outcomes (between-person approach) are not necessarily applicable to what is true for an individual (within-person approach) (Hamaker, 2012). Last, there was close and repeated contact with the researcher and participants who were also alerted of this research's practical relevance on their working environment. This could have increased the willingness to participate in this research (Green, 2006). On the other hand, continued recall by the researcher may have led to irritations and less willingness, affecting the workplace belongingness among novice nurses within the organisation as the researcher was introduced as an employee from the organisation (Ohly et al., 2010).

Nevertheless, this study also has its limitations from which also the recommendations for further research will flow. First, even though a considerable number of days nested within persons were measured, the number of participants that participated in this research needs to be accounted for as it was relatively low with eleven. This could diminish the reliability of this research. Notwithstanding, it should be indicated that Hamaker (2012) also describes the fact that a relatively high number of daily measurements could be an alternative in studies with a low amount of participants. Despite this assumption, it is highly suggested that for further research, a higher number of participants should be included to ensure that the reliability of these outcomes is more undisputed. This higher number of participants could also ensure that variables measured

once at the person level could also be included in the analyses without reliability concerns.

Second, it was addressed that this study reduced the retrospective bias. Although most of the measurements were taken immediately after a working day, a couple of daily questionnaires per individual were missed and sometimes completed a day or several days later, which subverts the retrospective bias and thus the validity and reliability of this research. This may also have been inherent in the fact that during the study, the TIIM-application crashed and did sometimes not send a notification to alert the participant for filling in the questionnaire, causing several days to be missed and lowering the willingness to continue as participants had to make an extra effort to sign up for the app again. This resulted in questionnaires completed one or several days later to get the highest possible number of collected data. Therefore, it is suggested to adopt an already proven and reliable tool to gather the data from the participants to tackle the retrospective bias and get the highest possible effectiveness rate out of the prepared questionnaires.

Third, this research performed a multilevel analysis with two levels: an analysis with days nested within-persons was conducted as the observations at one level (daily measurements) are nested within measurements at a higher level of analysis (participants). Although this research was done in an organisation with several locations that could be used as the level 3 analysis, a three-level model was not conducted. No differences between specific locations or other organisations were included. A three-level structure (the third level would have been participants nested within organisations) is recommended in further research to examine and include the differences between different organisations. It helps explain why one organisation has different effects on workplace belongingness due to interactions compared to other organisations (e.g. the culture of the organisations or implemented policies). In addition, due to the low number of participants, it is recommended to include different organisations as a level three unit of analysis to accommodate a higher number of participants.

Implications for practice

As already stated, this research took place in a natural setting of a VVT organisation. Based on the results of this study, the importance of workplace socialisation and its effect on workplace belongingness was established. The next part presents some practical applications are that could support a VVT organisation in enhancing workplace belongingness.

It is concluded that leadership within a team positively influences workplace

belongingness among employees (Raza et al., 2020). The healthcare organisation may want to make the team leader within the healthcare team aware of how influential interactions with a novice nurse are during the onboarding period. For example, a team leader can receive training on how to create a sense of acceptance or competence felt by a novice nurse after an interaction with the team leader. This, in turn, can lead to higher levels of workplace belongingness among novice nurses. Of course, a team leader could also make other colleagues aware of the critical factor interactions can have within the team because interactions are not just limited to the team leader. By including such training in an organisation's policies, handholds could be offered to team leaders to put this into practice on a structural basis.

It is also acknowledged that a buddy system could foster workplace belongingness (Magaña, 2021) and eventually reduce turnover among novice nurses (Remsburg, 1999). A buddy system is a system in which an already embedded employee supports a new employee in becoming comfortable within a new organisation during the onboarding period. It provides in a point of contact for questions about the organisation's culture, procedures, policies, advice, support or just a moment of a quick chat and having someone to lunch with (Remsburg, 1999; Loveland, as cited in Nalband, 2017). Especially the socialisation impact a buddy system can have on novice nurses seems very useful to implement during onboarding periods (e.g. a point of contact, having a quick chat, or someone to lunch with). A buddy can be made aware, from the HR department, of the impact of their interactions that could evoke a sense of acceptance and competence in a novice nurse. Shaping this awareness among buddies could be enhanced due to training or workshops. Again, this could result in a higher level of workplace belongingness and the possible prevention of turnover among novice nurses within the organisation.

Conclusion

This research investigated the effect of workplace interactions on the feeling of workplace belongingness among novice nurses in the VVT-sector in their first three months of practice. On the grounds of this research, it can be concluded that interactions on the work floor that cue feelings of acceptance and competence do have a significant effect on workplace belongingness. This effect is identified on both daily-level as well as on person-level. So based upon these results, it can be stated that this research emphasises the idea of embedding a policy intending to enhance interactions on the work floor that cue feelings of acceptance and competence to strengthen the sense of workplace belongingness, which even could result in

preventing an early turnover among novice nurses in an already heavy suffering VVT-sector in terms of dropouts.

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