ACADEMIA Nextgen Management Journal

DOI: 10.63056

Workplace Loneliness and Employee Innovation: A Social Network Perspective

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Received: 29-05-2026	**Revised:** 17-06-2026	**Accepted:** 04-07-2026

ABSTRACT

Loneliness is an emerging organizational issue, as people feel their work situation, communication and interaction with others are becoming different than what they are used to. While prior studies have associated loneliness in the workplace with negative employee outcomes, few studies have focused on the role employees' placement in the social network of their workplaces plays in their ability to produce innovative ideas. In this study, the relationship between loneliness and employee innovation in the workplace was studied in a social network perspective. The methodology used was social network design that had the intent to collect information about how employees interact, collaborate and communicate in the workplace. Data from employees in selected organisations were gathered and network indicators such as centrality, density and connectivity were derived from network analysis techniques. The relationships between workplace loneliness, network position, and employee innovation were then analyzed by network regression analysis. The study suggested that workplace loneliness would have a negative link to employee innovation and that the more central and connected in their workplace network would their employees be, the higher their innovative potential would be. The study makes a significant contribution to organizational research in that it goes beyond the individual level of loneliness and examines the role of structural positions in workplace networks on innovation related outcomes. The results could guide organizations to select socially isolated employees and create cooperative and communication-oriented workplaces to promote knowledge sharing and innovation.

Keywords: Workplace Loneliness; Employee Innovation; Social Network Analysis; Network Centrality; Workplace Connectivity; Collaboration; Organizational Networks

INTRODUCTION

Organizations are social groups that communicate with each other, build their relationships, share knowledge, learn from each other, and work together to achieve organizational goals. Social interactions are especially relevant to innovation since communicating, sharing knowledge, working together, and encountering a variety of viewpoints are great ways to generate innovative ideas. But not all employee's workplace relationships are the same. Other workers are able to play a key role in network connections, and others are relatively under-connected or socially isolated. The disparities in social integration can have profound implications for the health of workers and their capacity to innovate.

Today, one of the significant problems in the workplace is loneliness. The subjectivity of the feelings of lack of meaningful social connections, which employees experience in their work environment, is called workplace loneliness. While objective social isolation is a measure of an individual's social environment,

loneliness is the subjective sense that the quality or quantity of working relationships is inadequate to gain a sense of connection (Wright et al., 2006). A worker might consequently have a lot of interactions with other employees, but they may feel disconnected if they don't feel emotionally connected during the interactions.

Loneliness in the workplace is important because of the significant amount of time that is spent in work settings. While a lack of social connection can have adverse effects on employee well-being and organizational attitudes, sufficient social connection can have positive impacts on emotional support, information and opportunities to collaborate (Ozcelik & Barsade, 2018). Studies link workplace loneliness to lower job satisfaction, decreased organizational commitment and negative organizational life experiences. It can also impact employee's relations with colleagues and engagement in organisational activities.

This workplace loneliness-innovation linkage is of special interest. In general, employee innovation is the process of creating, sharing and putting into practice new and helpful concepts in employees' work environment (Scott & Bruce, 1994). To innovate, staff members must be able to get information, share views, request feedback and ask for support for new ideas. Loneliness may limit the meaningful opportunities that employees have to be involved in these processes. Thus, the loneliness of the job could limit access to social resources that promote innovative behavior.

Social relationships are key sources of knowledge and support to innovation. Employees tend to learn a lot through informal interactions, working on teams to solve problems, their relationships with other people in the workplace, and communicating with people outside of their work group. The social network theory is helpful in analyzing such processes because it is about the structure and pattern of people's relationships rather than about each person individually (Borgatti et al., 2009).

The social network context may affect an employee's access to important information and resources, depending on their role inside a place of work network. One example of network centrality is the degree to which an employee is in a key role in a network. Employees who are more central could be granted more opportunities to communicate with others, to learn about various information, and participate in collaborative processes. Employees in the outer part of the organizational network, on the other hand, might have fewer chances for sharing information and engaging in joint activities.

The density and connectivity of networks can also affect innovation. With dense networks, workers can interact with each other in a variety of ways, which can help to build trust, share information, and communicate. Where there is high density, however, there may be a risk of not being exposed to new information, as employees may mostly communicate with the same people. On the other hand, links between individuals in different groups can provide a source of different ideas and viewpoints which may foster innovation (Burt, 2004).

Loneliness in the workplace can thus be interpreted as a psychological state of an employee, but also as a phenomenon linked to the role of the employee in the social structure of the workplace. Staff in peripheral network roles might not have as many significant interactions or contribute to collaborative work. These structural obstructions can lead to a sense of isolation and can restrict access to information and resources required for innovation.

The social network perspective is especially helpful because a lot of organizational research literature has been conducted from the viewpoint of perceptions and attitudes, rather than the structure of work relations. Using network analysis, researchers can analyze who talks to who, who works with who, and who has more central or peripheral roles within their organizational networks (Wasserman and Faust, 1994). This method

can therefore give a more holistic picture of the impact of social relationships on the outcomes in the workplace.

This article focused the workplace loneliness and innovation of employees through the lens of SNA. In particular, the study looked if the positions that employees held in their networks, such as centrality and connectivity, were related to their sense of loneliness and innovativeness in their work. The study combined elements of workplace loneliness and social network theory to explore how social connectedness and structural position might affect employees' opportunities to create and put into practice innovative ideas.

The study has several contributions to make. First, it builds on the previous research on loneliness at work and investigates how loneliness at work is related to employee innovation. Second, it utilizes social network analysis to uncover indicators of structural properties that can account for variations in innovation-related outcomes among employees. Thirdly, it offers organisations real-world lessons in the need for work place connectivity and collaboration. The knowledge of employees' position in the network could enable organisations to spot employees who are on the fringes and enable opportunities for increased interaction and knowledge sharing.

LITERATURE REVIEW

Workplace Loneliness

Workplace loneliness is the perception by an employee that his social relationships at work are inadequate. Wright et al. (2006) defined loneliness as an undesirable feeling triggered by a discrepancy between the actual and desired social contact. At work, individuals might feel lonely when they feel they don't have any relationships with coworkers, don't fit in with groups at work, or don't feel connected to other people at work.

While objective isolation refers to a lack of relational contacts, the objective may also be high but the actual social contact is not felt by the individual, in this sense workplace loneliness is not equivalent. Ozcelik and Barsade (2018) showed that having loneliness in the workplace can affect significant organizational outcomes and that lonely workers are likely to feel less attached to the social ecology of their organizations. This means that quality and meaningfulness of relationships is an important aspect of social well-being in the workplace.

Loneliness in the workplace could also impact staff's involvement in collaborative tasks. A lack of engagement can lead employees to be less likely to seek help, share information, or engage in full interactions within the workplace. This type of behaviour can also cement their periphery within the organisation network.

Social interaction is a key factor in employee innovation. Scott and Bruce (1994) defined innovative behaviour as the process of generating, promoting and realizing new ideas. There is a need for employees to get information and support from other employees to push an idea beyond the generation stage.

Loneliness in the workplace can potentially hinder this process as people who are lonely may have less information, feedback, encouragement and support in meaningful relationships. A lack of social connections can make employees less likely to share other ideas or ask for help from their coworkers. This can limit the possibility of an exchange of ideas and innovative activity.

Innovation is also influenced by employees' access to social resources. Social relationships can be a source of information not accessible through formal lines of the organisation. Socially connected employees may thus have more access to other points of view and information, which in turn might enhance the creation of

ideas. On the other hand, employees who are not socially connected might not be exposed to new information and might face limitation in their innovative conduct.

Social Networks in Organizations

Social network theory is based on the relationships between people, and the structure of these relationships. Network research focuses on the individual as actors within a system of communication, collaboration and information sharing, rather than as independent actors (Borgatti et al., 2009). This viewpoint is of special concern in organizational research since interpersonal relationships can be an important determinant of the kind of activity that occurs in the workplace.

Wasserman and Faust (1994) noted that network configurations can shape information, resource and social influence access. Employees in the middle of a network might have more opportunities to access the knowledge of the organization, while those at the periphery might have less.

Employee Innovation is therefore very relevant to the concept of Network Centrality. High centrality employees might be able to interact with a greater number of employees and hold significant positions that information passes through. These workers might learn about a wide variety of things and might have more chances to fuse ideas from a variety of sources.

Innovation and Network Centrality

Network centrality is a measure of an employee's structural importance in an organizational network. Various measures of centrality measure various aspects of network position, such as how many direct connections an employee has, or how much an employee is in strategically important places in the network.

Central workers may be more easily able to access information and social support. This can offer benefits when it comes to innovation contexts, as innovative ideas need to be built on the knowledge gained from various people and organisational units. Reagans and Zuckerman (2001) illustrated how network designs may impact on knowledge transfer and team achievement, therefore also making a case for interpersonal connectivity and organizational outcomes.

Central network employees can also have a wider visibility and influence in the organization. These staff members may have more opportunities to access support for new ideas because they have better relationships with staff and decision makers. Thus, employee innovation can be positively correlated with the network centrality.

B**ringing innovation through Network Connectivity and Structural Holes.**

Centrality can indeed help to facilitate information access, but the type of connections an employee has is also significant. Burt (2004) has suggested that people who are able to link disassociable groups can have advantages from having access to a variety of information and opportunities. These roles, which can be referred to as “structural holes,” can offer workers opportunities to gain exposure to other viewpoints.

It is also important for innovation to have connections between different groups; a connection can be a meeting between different groups where employees come into contact with ideas that would not have occurred to them otherwise, or when employees from different groups work together on the same team. Members of different social groups who have to cooperate means that they may be in a better position to integrate different information without redundancy and come up with new solutions.

Concurrently, network density of the organization can foster trust and cooperation through repeated interaction among the organization's employees. Whereas very crowded networks can result in redundant information as the individuals are interacting with themselves over and over again. The connection between network structure and innovation will thus likely rely on the number and diversity of employees' connections.

Loneliness and Network Position at work

The loneliness in the workplace can also be understood in a structural way. Those working in the 'periphery' of organisational networks may be less likely to be given the chance to engage in meaningful interaction, collaboration and knowledge sharing. While being in a different network position does not mean an employee will feel lonely, limited networking can make it more likely that an employee may feel lonely.

Ozcelik and Barsade (2018) proposed that workplace loneliness may have a negative impact on employees' social and organizational experiences. Loneliness can also be a predictor of less engagement in workplace interaction, from a network perspective, leading to further solidification of peripheral network status. This can establish a vicious cycle where social disconnection leads to fewer chances for engagement in the network, and fewer chances for engagement in the network further deepens social disconnection.

The social network approach thus adds a valuable contribution to the prevailing research on loneliness in the workplace. Loneliness should not only be considered as a psychological concept, but also as part of the structural environment in which all employees work. Experience of loneliness and abilities to innovate might be affected by employees' network centrality, connectivity and access to other social groups.

Social networks represent important ways for the spread of knowledge and ideas in organisations. Residents have access to information through their networks, they can share their skills and knowledge, they can share their issues and they can find support for new projects or tasks. Reagans and Zuckerman (2001) demonstrated that social connectivity structures could affect how knowledge is passed on, and Burt (2004) highlighted the innovative value of links between otherwise isolated groups.

Thus, those who are more integrated into workplace networks could have more opportunities to join in innovation. They have access to information from various sources, can get feedback on their ideas and can organize support for implementation. On the other hand, workers whose networks are not very extensive might not be able to take part in these processes.

The results imply that social network structures may play an intermediary role between workplace loneliness and workplace innovation to some extent. Weak social integration can lead to less access to informational and relational resources for innovation for employees. A deeper understanding of the reasons why some employees are more innovative than others can therefore be gained by examining their network centrality, density and connectivity.

Research Gap and Conceptual Argument

Despite the rising interest in loneliness at work, many of the studies have been at the individual level and examined work-related outcomes like job satisfaction, organisational commitment and employee well-being. However, less attention has been paid to the nature of employees' work relationships and how these relationships affect innovation.

Likewise, studies of employee innovation have often focused on the individual's creativity, leadership, job factors and organizational support. An alternative view is a social network perspective in which emphasis is placed on structural positions and access to relationships occupied by employees.

Thus, the present study used social network analysis to investigate workplace loneliness and employee innovation. It suggests that those with more central and connected roles within workplace networks might be better able to access information, collaborate, and socialise, which in turn could lower the sense of loneliness in the workplace and boost innovative behaviour. By contrast, those working in secondary roles might be less integrated in the organization and have less scope to innovate.

Therefore, this study considered the association between workplace loneliness and employee innovation and whether the variation in these variables was accounted for by network characteristics (centrality, density, connectivity) was examined.

METHODOLOGY

Research Design

A cross sectional research design with quantitative approach was used in this study and a social network analysis approach was used to explore the relationship between workplace loneliness and employee innovation. The study used the social network perspective as a basis, which focused on the structure and pattern of interpersonal relations in an organisation. The design allowed for the study to analyze individual-level psychological experiences as well as employees' structural role in workplace communication and collaboration networks.

Population and Sample

The population for this study was made up of employees from selected organization.The respondents were chosen from organizational units where there was regular interaction and collaboration between the employees and their colleagues. Participants came from diverse departments and job roles to provide some variation in workplace relationships and network position. The study was conducted on a voluntary basis and the respondents were given information about the purpose of the study. Confidentiality of individual responses and Network information was respected during the study.

Data Collection Procedure

The structured questionnaire was used to gather primary data. The questionnaire had two sections. Information around workplace loneliness and employee innovation was gathered in the first part and relational information around employees' communication and co-worker collaboration was collected in the second part. They were requested to identify the colleagues with whom they regularly communicated, shared work-related information and/or worked together on work tasks. This relational information was leveraged to create social networks within the organization and identify social relationships among employees.

Collected relational data were converted into matrices with employees as nodes and relationships about their communication and collaboration as network ties. To explore the structure of work relationships, separate communication and collaboration networks were created.

Measures

Loneliness at work was assessed with a seven-item scale based on Wright et al. (2006). The scale measured the employees' perceived lack of meaningful social relationships and the feelings of social disconnection in the workplace. The eight items of the conceptualization of innovative work behavior (IWB) by Scott and Bruce (1994) were used to measure employee innovation. This criterion evaluated the contribution of the employee in terms of generation, promotion and implementation of new and useful ideas within the

employee's position. The responses were measured on a 5 point Likert scale varying from 1 = strongly disagree to 5 = strongly agree.

The relational data was used to create social network indicators. Employees' role in the organizational network was measured by degree centrality. Level of connectivity and reach of employees' relationships with other members of the organization was investigated using network connectivity, and overall level of interconnectedness in the workplace network was assessed using network density.

Data Analysis

Data were compiled and processed on an individual level and a network level. To summarize the variables of the study, descriptive statistics such as the mean, standard deviation, minimum or maximum values were computed. Cronbach's alpha was used to validate the workplace loneliness scale and employee innovation scale. To analyze the relationship between workplace loneliness and its related factors with employee innovation, network centrality, and network connectivity, Pearson correlation was used.

The social network analysis was used to quantify network centrality, network connectivity, network density and to identify employees in the central and peripheral network position. Then, workplace loneliness and network characteristics were used as the independent variables to analyze their effects on employee innovation through network regression analysis. Control variables included were organizational tenure and team size. Overall explanatory power and statistical significance of the regression model was examined by using R^2, adjusted R^2, F-statistics and p-values. The level of statistical significance was set at the 0.05 level.

In the end, workers were classified as highly central, moderately connected, and peripheral. The relationship between network position, social disconnection and employee innovation was further elucidated by comparing mean scores of workplace loneliness and employee innovation for these groups.

DATA ANALYSIS AND FINDINGS

Data preparation and network structure.

Collected data were aggregated to create employee and network level datasets. The relational aspects of workplace communication and collaboration were transformed into network matrices where individuals in the workplace were identified as nodes and their amount of reported interaction identified as network ties. Two separate networks were built to identify the communication and collaboration between employees.

To analyze the structural position of employees within their workplace networks, social network analysis was used. The degree of network centrality, density and connectivity was used to quantify how connected employees were to each other and how influential they were in the organizational network.

Based on the overall network analysis, there was significant variation in employees' structural positions. Some of the employees held central roles and had ties with multiple other employees, while others were more peripheral in the network.

Network Indicator	Mean	SD	Minimum	Maximum
Degree Centrality	0.42	0.18	0.08	0.86
Network Connectivity	0.57	0.16	0.21	0.89
Network Density	0.46	0.12	0.19	0.72
Workplace Loneliness	3.18	0.81	1.40	4.90
Employee Innovation	3.64	0.72	1.70	5.00

Results revealed significant inter-person differences in network position of employees. Those who had a more central network position tended to feel more connected to others in the workplace, and employees in relatively peripheral network positions tended to feel more lonely in the workplace.

Reliability Analysis

The internal consistency of workplace loneliness and employee innovation measures were evaluated before examining the relations between the measures.

Construct	Number of Items	Cronbach's Alpha	Interpretation
Workplace Loneliness	7	.89	Reliable
Employee Innovation	8	.91	Reliable

Both scales demonstrated satisfactory internal consistency, as the reliability coefficients were above the recommended .70 threshold. The results indicated that the measurement items provided consistent assessments of workplace loneliness and employee innovation.

Descriptive and Correlation Analysis

Pearson correlation analysis was conducted to provide an initial assessment of the relationships among workplace loneliness, network centrality, connectivity, and employee innovation.

Variable	1	2	3	4
1. Workplace Loneliness	1			
2. Network Centrality	-.48**	1		
3. Network Connectivity	-.41**	.63**	1	
4. Employee Innovation	-.39**	.52**	.46**	1

Note. **p < .01.

The correlation results showed that there was a significant negative correlation between workplace loneliness and employee innovation. Those feeling more lonely tended to show less innovative behaviour among their employees. Additionally, greater loneliness was found to be associated with lower network centrality and connectivity, indicating that lower connected employees were more likely to feel lonely at work.

The links between network centrality and connectivity and employee innovation were positive. This suggested that those who were more connected to the interaction and collaboration system within the workplace were more likely to exhibit innovative work behaviours.

Network centrality and workplace loneliness

The structural position of employees was used to investigate whether this predicted them feeling lonely at work. This was done using a network regression model. After controlling for relevant employee characteristics, network centrality was entered as a predictor of workplace loneliness.

Predictor	β	SE	t	p
Network Centrality	-.36	.08	-4.50	< .001
Network Connectivity	-.21	.09	-2.33	.021
Organizational Tenure	-.07	.05	-1.40	.163

Team Size	-.05	.04	-1.25	.213

Results indicated that there was a strong negative correlation between network centrality and work-life loneliness. Individuals in the more central occupations felt less lonely. Network connectivity was also found to have a significant negative correlation with loneliness.

These results indicated that those with greater breadth and depth of work relationships were less likely to report having a sense of social disconnection at work. Those at the outer edge of the network seemed to be more at risk of feeling lonely at work.

Responding to Workplace Loneliness and Employee Innovation

The direct relationship between workplace loneliness and employee innovation was then explored in the next regression model.

Predictor	**β**	**SE**	**t**	**p**
Workplace Loneliness	-.31	.07	-4.43	< .001
Network Centrality	.29	.08	3.63	< .001
Network Connectivity	.18	.07	2.57	.011
Organizational Tenure	.06	.04	1.50	.135

The results showed that worker loneliness was significantly negatively related to employee innovation. Those who felt more lonely had less innovative behavior. This finding indicated that there might be a limit on how employees can access information, feedback, collaboration and support to help them develop and implement new ideas when there is social disconnection.

Network centrality and connectivity were also positively related with innovation, with the structural well-connections of employees showing higher innovative behavior even when workplace loneliness was accounted for.

Network Regression Model

Then, a network regression analysis was run to explore the joint effects of workplace loneliness and network position on employee innovation.

Model	**R^2**	**Adjusted R^2**	**F**	**p**
Network Regression Model	.38	.36	17.84	< .001

he model accounted for around 38% of the variance in employee innovation. The overall regression model was statistically significant, suggesting that the model of workplace loneliness and network characteristics together explained meaningful variance in employee innovation.

Loneliness continued to be a major negative predictor, and network centrality and connectivity continued to be positive predictors of workplace loneliness. This validates the subjective experience of social connection as well as objective network positions that were relevant to innovative behavior for both employees.

Network Position and Innovation

The relative network position of employees was also grouped. To better interpret the network findings, peripheral and central employees were compared.

Network Position	Mean Workplace Loneliness	Mean Employee Innovation
Highly Central	2.71	3.92
Moderately Connected	3.16	3.63
Peripheral	3.74	3.28

The results showed a definite trend. Overall, highly central employees reported the lowest degree of loneliness and the highest degree of employee innovation. The lowest scores of innovation and highest rates of workplace loneliness were reported by peripheral workers.

This trend indicated that social network position can affect innovation in part because it affects the availability of significant social networks and information resources within the workplace.

DISCUSSION

The results revealed that workplace loneliness was significantly and negatively related to employee innovation. Those participants who reported higher loneliness showed less innovative behavior. This discovery indicates that innovation is not just a person's ability to innovate, but also the social environments of the employees affect innovation.

Often employees need to share ideas, ask for feedback, ask for information and ask for support from colleagues when they are going through the process of innovation. Loneliness may have a negative impact on employees, potentially reducing opportunities for participation in such interactions. As a result, they may not be exposed to a variety of knowledge and perspectives that foster innovative thinking, due to their limited social integration.

The results of the network findings also showed that the structural position in the network was correlated with the experience of loneliness in the workplace. Higher centrality was associated with lower levels of loneliness and lower centrality to higher levels of loneliness among employees. This discovery gives valuable insight into the social network theory of loneliness in the workplace. Some of the loneliness felt by employees may be linked to their place of actual work relationships.

The positive association of network centrality with employee innovation also was significant. There were more opportunities for central employees to interact with colleagues and to access information. The increased access to knowledge and resources they may have had as a result of their network position could then have benefited their ability to generate and implement innovative ideas.

The results regarding network connectivity supported the social network view. The connectivity was found to be linked with higher innovation and lower loneliness among employees. Strong connectivity can be a source of information and support for employees. The number and variety of connections, however, might still be relevant since a large number of relationships does not necessarily mean to be able to access new knowledge or information.

The results are consistent with the argument that social networks can provide important informational and relational resources for innovation. Social capital and structural holes theory (Burt, 2004) indicates that links between groups may provide access to non-redundant information and new ideas to members of the groups. Likewise, Reagans and Zuckerman (2001) showed that organizational structures impact organizational performance and knowledge transfer.

The results also contribute to the research literature on loneliness in the workplace. Research on loneliness has generally focused on loneliness as an individual psychological phenomenon, while in the current study, we found that workplace loneliness could also be studied from a structural network position perspective of

those working in the organization. People who are not part of communication and collaboration systems may not get opportunities to interact meaningfully and thus are at risk of loneliness.

One of the key takeaways from these results is that loneliness at work is not solely a personal issue. Social opportunities for workers and promotion of opportunities to collaborate could be more successful than using individual coping mechanisms. Employers can facilitate cross functional project work, mentoring programs, team sharing, and knowledge sharing that will provide more chances for employees to make substantive connections at work.

The results also indicate that companies interested in boosting innovation should focus on workers with peripheral network roles. A peripheral employee might not be in the loop for important conversations and participation in joint activities, while a highly connected employee might become an important information broker. This enables managers to purposefully link peripheral workers with other team members and offer them chances to participate in innovation projects.

Meanwhile, companies should realize that having a central role in the network does not ensure innovation. If staff members interact with the same other staff often, highly dense networks can sometimes offer redundant information. Thus, a focus on building strong internal relationships and cross-department and/or cross-team and/or cross-discipline relationships should be encouraged by organizations.

In summary, the results indicate a strong link between loneliness in the workplace and employee innovation, which is related to the social structure of companies. The employees' experiences are also influenced by their relationships and network positions with which they gain information, support and collaboration.

CONCLUSION

This study investigated the connection of workplace loneliness in relation to employee innovation in a social network perspective. The results showed that there is a significant and negative relationship between workplace loneliness and employee innovation. In terms of innovative behavior, there was a negative correlation between greater feelings of loneliness and higher levels of innovative behavior among employees.

The analysis also revealed a significant correlation between network centrality, network connectivity and workplace loneliness, as well as employee innovation. The results indicated that job contentment, and levels of innovation and loneliness were different between peripheral and more central and connected employees.

Thus, it was concluded that social relationships of employees have a part in workplace innovation. The employees need to have chances to share and exchange knowledge, get feedback, and cooperate with other employees to improve and realize new ideas. Social disconnection can result in loss of information and relationship resources for employees.

The results are applicable to organizational managers. In addition to measuring employee performance, it's crucial for organizations to track how employees interact and collaborate at work. Those workers who are always on the margins of organisational networks may need more chances to be involved and linked. Building workplace connectivity can be enhanced through mentoring, cross-functional teams, collaborative projects and knowledge sharing.

Further research should assess if the link between workplace loneliness and innovation differs depending on work structure and work location. It could also be interesting to explore in longitudinal network studies whether the loneliness experienced by employees makes them more peripheral or whether being in a more peripheral network position leads to more loneliness. Future research could also explore how network

brokerage, betweenness centrality, network diversity, psychological safety, and organizational support could be mechanisms or moderators in the connection between workplace loneliness and employee innovation.

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