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Environmental Factors and Innovation: The Role of Urban Green Spaces in Entrepreneurial Creativity and Stress Reduction

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ABSTRACT

Urban green spaces are identified as important parts of sustainable cities by providing psychological and cognitive benefits that can help nurture creativity and innovation. This work explores the impact of time spent in urban green spaces on the entrepreneurial creativity of university students in Khyber Pakhtunkhwa, Pakistan, with stress relief as a mediator. Quantitative cross-sectional data were collected from 250 undergraduate and graduate business and entrepreneurship students through stratified random sampling. Instruments included a researcher-developed questionnaire detailing time spent in green spaces, the Perceived Stress Scale (PSS), and an adapted Entrepreneurial Creativity Scale. Correlational and mediation analysis provided conclusive evidence for positive relationships between green space usage, stress relief, and entrepreneurial creativity, with stress relief as a significant mediator. These results corroborate emerging findings on the psychological effects of natural environments on creativity and stress. Theoretical findings inform the design of the study by underscoring the significance of stress reduction as a mediating variable in environmental psychology and entrepreneurship research. Practical findings urge urban planners and university administrators to include greenery in campuses and cities to enhance creativity and promote wellness. The work calls for more socio-culturally diverse studies to broaden the scope of these conclusions.

Introduction

Urban green spaces not only improve the aesthetic value of a city but also offer psychological and social benefits and promote a healthy society. These spaces are appreciated for the improvement of mental well-being, fostering emotional stability, and alleviating stress which is necessary for creativity (Kaplan & Kaplan, 1989; Berman et al., 2008). Creativity and innovation are pertinent to the scope of entrepreneurship as they aid in developing novel solutions and complex business ideas. Cognitive flexibility and divergent thinking are preconditions for effective entrepreneurial thinking, and urban green spaces have emerged as important facilitators for such thinking (Loder 2014). Their impact does not stop at individual well-being; they also enhance collective innovation and economic development, especially within entrepreneurial ecosystems.

In developing countries such as Pakistan, urbanization has led to the obliteration of almost all green spaces, with detrimental impacts on residents' mental health and creative abilities. This is even more problematic in Khyber Pakhtunkhwa (KP), where urban development has kept pace with infrastructural growth at the expense of ecological balance. The decrease in green areas has increased stress levels and decreased the ability to engage in creative activities (Hameed & Nadeem 2019). Even so, little attention has been focused on the impact of urban green spaces on the entrepreneurial creativity of the region.

The University of Peshawar, Abul Wali Khan University Mardan, IMSciences, and other universities in KP region are crucial for developing future experts and entrepreneurs because they offer business and entrepreneurship programs. Any research institution, including universities, is required to have an ecosystem that permits aggressive initiatives for as high as business risks and creativity from its members. Unfortunately, academic stress, along with other entrepreneurial socially constructed expectations of performance, is likely to act as a creative block. The presence of green areas in urban settings within reach, or in the proximity of the university, can greatly assist in removing stress and enhancing creativity. However, there is little research centered in this particular context.

As mentioned earlier, internationally there is an increasing body of literature investigating the potential of nature as a stress mitigator and its correlation with creativity. There is a valuable body of research which shows that the presence of greenery helps to alleviate mental and emotional stress and thus makes it easier to focus on creative activities (Ulrich et al., 1991). There is however, very little that is focused on the application of this evidence in (KP) Khyber Pakhtunkhwa province, Pakistan. It is very limited focus on the lack of evidence, which not only deepens the understanding of the dynamics surrounding the issue, but also impacts the effective strategies focusing on urban design and planning of the campuses to foster increased entrepreneurial activities.

This study aims to explore the gaps identified by analyzing the association between time spent in urban green spaces and creativity for business amidst stress relief as a mediator. Designed around the KP universities teaching business disciplines, this research aspires to help construct blueprints for utilizing urban green spaces to encourage innovation and creativity through evidence-based research. While seeking to understand the reason for the existence of entrepreneurial disparity, especially in the developing regions, the study adds value to green spaces by addressing their psychological and cognitive benefits and their impact on entrepreneurial activities.

Supporting theories

The Restorative Environment Theory (Kaplan & Kaplan, 1989) and Attention Restoration Theory (Kaplan, 1995), together offer a comprehensive framework for understanding the influence of urban green spaces on entrepreneurial creativity. According to these theories, natural environments, such as urban green spaces, have the capacity to restore cognitive resources by reducing mental fatigue and alleviating stress. Urban green spaces offer a calming effect that helps individuals recover from the strains of sustained attention and mental overload, which are common in high-stakes academic and entrepreneurial endeavors. When individuals spend time in these environments, the natural setting helps to shift their focus from the demanding, attention-intensive tasks to a more restorative state. This recovery of mental resources plays a crucial role in enhancing cognitive flexibility, which is essential for generating creative ideas and solutions.

Furthermore, the restorative qualities of green spaces are particularly relevant in entrepreneurial contexts, where creativity and innovation are central to success. The reduction of stress through exposure to green environments, as outlined in these theories, facilitates a shift in cognitive processing, enabling individuals to engage in divergent thinking and explore novel ideas. In the context of universities offering entrepreneurship programs in Khyber Pakhtunkhwa, the stress associated with academic pressures and entrepreneurial tasks can hinder optimal creative performance. Green spaces serve as a powerful tool for mitigating this stress, providing students and entrepreneurs with the mental clarity needed to foster innovation. Therefore, by

integrating the principles of both Restorative Environment Theory and Attention Restoration Theory, this model emphasize how urban green spaces not only contribute to stress relief but also enhance the creative capacity necessary for entrepreneurial success.Connection between Time Spent in Urban Green Spaces and Stress Relief The importance of spending time in urban green areas is widely acknowledged due to how effectively it can help relieve stress. Green spaces create a setting conducive to rest which aids in relieving the mental and physical stress contended with in busy, high-pressure environments (Kaplan & Kaplan, 1989; Ulrich et al., 1991). Various studies have indicated that exposure to nature is directly related to lower cortisol levels—a stress-related hormone—and increased calmness (Berman et al., 2008). For students and business people, having low-stress is very important since mental health is critical for cognitive function and overall performance (Hartig et al., 2003). It becomes evident that with increased exposure to urban green spaces, people are able to gain a greater sense of calm which is vital for stress relief. The longer people spend in these areas, the better they are able to escape the stress posed by everyday activities and the greater their mental clarity and emotional balance becomes (Kuo, 2015). This link establishes the role which urban green spaces play as a potent buffer for stress and respite from the demands of academic or entrepreneurial endeavors. Multiple doctors recommend green areas because, apart from reducing stress levels, it also has long lasting effects on mental health for an individual. Kaplan (1995) highlights how these areas help promote relaxation and reduce mental exhaustion which enables a person to refocus and begin new tasks with better energy. According to Bratman et al. 2015, when people go out in nature, it is usually associated with an increase well-being thereby stressing the relationship between nature and alleviation. With students and entrepreneurs being some of the most stressed people located in academic environments, access to nature becomes highly necessary for improvement in productivity and well-being (Giles-Corti et al. 2005).The authors make an important observation that in already developed regions where people remain surrounded by nature deprived of urbanization, green spaces become a vital source for stress alleviation and relaxation (Kuo 2015). As cities continue to develop, the need for mental health resources increases drastically Mitchel and Popham (2008) suggest this enables stress to be controlled, green areas are crucial for it. Kaplan (1995) makes a very important argument and these spaces also ensure that people are given the opportunity to access peace encourages the ability to withstand mental stress in the future.Connection between Stress Relief and Entrepreneurial Creativity Relieving stress is beneficial as it helps to improve the entrepreneurial mindset and the state of their creativity by greatly improving the mental state needed for ideation and innovation. High stress is regarded as a severe barrier to cognitive flexibility and problem solving, both vital for entrepreneurial creativity (Eysenck et al., 2007). Individuals under relatively low stress are more likely to think divergently and pursue new ways of solving problems or deal with challenges (Baer, 2012). Stress relief assists in the easing of cognitive blocks, leading to more creative thinking and unique business ideas (De Dreu et al., 2008). The literature is clear that effective stress management leads to improved access to creative potential and innovative activity, which is important in entrepreneurship (Amabile et al., 1996).The importance of creativity in business where competition is stiff and innovation is key to success is particularly well documented to be alleviated by stress relief in an entrepreneurial context. Entrepreneurs often report feeling so stressed that they become unable to solve problems in a novel way or devise new ideas (Hülsheger et al., 2009). Focusing on recovery enables dissolving those barriers and enhances the ability to think beyond boundaries (Kaufman & Sternberg, 2010). This ability to think differently is crucial throughout any entrepreneur's endeavor in developing new products or services, setting creation as the flagmark (Shalley & Gilson, 2004). Stress relief is therefore looks as a factor that not just helps deal with negative pressure but is vital for optimizing creativity and, thus, for optimizing performance in entrepreneurship.Furthermore, research has shown that lower stress levels are associated with the motivation and productivity necessary for achieving success in entrepreneurship (Karatepe & Olugbade, 2009). Entrepreneurs who experience lower levels of stress are more inclined to participate in activities that require imagination, like thinking of new businesses to start or new products to create (Kirkpatrick & Locke, 1996). Stress relief in this case is important because it cultivates conditions that

nurture and enhance entrepreneurial output (Kaufman & Sternberg, 2010).

Connection between Time Spent in Urban Green Spaces and Entrepreneurial Creativity Time spent in urban green spaces can improve an individual's creativity significantly. Natural environments serve as places for mental rest and relaxation which subsequently enhances cognitive flexibility and creative thinking (Kaplan & Kaplan, 1989). Empirical research highlighted that exposure to green spaces enhances creativity by stimulating brain functions and promoting divergent thinking which is important in coming up with entrepreneurial ideas (Berman et al., 2008). Interacting with nature enables people to take a break from the pressures of academic or entrepreneurial tasks, and as a result, their mind refreshes (Hartig et al., 2003). Therefore, these entrepreneurs and students are in a better position to formulate new ideas and solutions to problems when they have access to such environments (Kaplan, 1995). The relationship that exists between green spaces and creativity is quite obvious: nature's restorative effects help people alter rigid thought processes and enhances the ability to address issues and challenges differently (Louv, 2008).The available evidence also indicates that time spent in green areas enhances cognitive functioning and increases creativity (Shibata & Suzuki, 2002). Spending time outdoors naturally reduces stress and mental fatigue, which compounds the individual's engagement toward the creative processes. (Tsunetsugu et al., 2007). Mental clarity enables entrepreneurs to concentrate on complex problems, propelling the focus toward simmering new ideas which enables novel business solutions. (Kuo, 2001). Green Areas not only act as a relief from the rigorous concentration demand in entrepreneurial tasks, but also serve as a nurturing ground for free-flowing thoughts, thereby improving productivity and innovation. (Peschardt & Stigsdotter, 2013).Moreover, the relation of green areas with creativity focused on entrepreneurship is even more important in metropolitan areas where individuals encounter great stress. (Ulrich, 1983). Disconnection from the daily grind is invaluable, and the associated lack of pressure coupled with the freedom to let thoughts roam in green areas enable individuals to redirect their focus elsewhere, allowing for cognitive restoration which fosters creativity. (Kuo, 2001). Such environments are beneficial to the creative potential of the entrepreneurs, directly influencing the outcome and success of the ventures. (Berman et al., 2008).Mediating Role of Stress ReliefThe role of stress relief in the connection between urban green spaces and entrepreneurial creativity is important in appreciating the ways in which nature stimulates innovation because of its impact on harmonious relief. Kaplan and Kaplan (2021) affirms that green spaces serve as a wonderful means of alleviating stress which, consequently, heighten cognitive performance and creativity. People are said to undergo stress relief when they are in green environments, which enables mental capacities to promote the sought after creative process (Lee et al., 2020). Such clarity of mind is necessary in entrepreneurs who need to solve the problems creatively and at the same time, think out of the box (Berto, 2021). As posited by Choi and Lee (2022), relief from stress does enhance creativity, proving to be an important mediator between time spent in urban green spaces and entrepreneurial creativity.Also, stress relief allows people to concentrate and stay motivated, which are essential aspects of creativity. Low stress levels among entrepreneurs increases the likelihood that they will partake in high level tasks like brainstorming new business ideas or figuring out innovative ways to solve problems (Ulrich et al., 2022) . As stress decreases, more mental resources become available for engagement in activities that require creativity (Yin et al., 2021). This means stress relief is a crucial mediator in the connection between creativity and green spaces because it gives people the needed headspace to work flexibly and devise new ideas (Van den Berg et al., 2020).At last, the sharp relief and creativity work hand-in-hand in a long-term scenario that shouldn't be overlooked. Creativity has a chance to suffer when there is chronic stress in the picture, and this can negatively influence one's success as an entrepreneur (Peschardt & Stigsdotter 2021). Urban green areas have the capacity to help in the reduction of stress, and that serves as a means to perpetuate invention and its sustenance. Entrepreneurs that stay in touch with these green areas stand a good chance at experiencing steady creative flow that is essential for the expansion and success of their businesses (Liu et al., 2023). There is, thus, a fundamental means of supporting creativity stress relief and recovery over time (Wang & Chen, 2021).

Conceptual Model

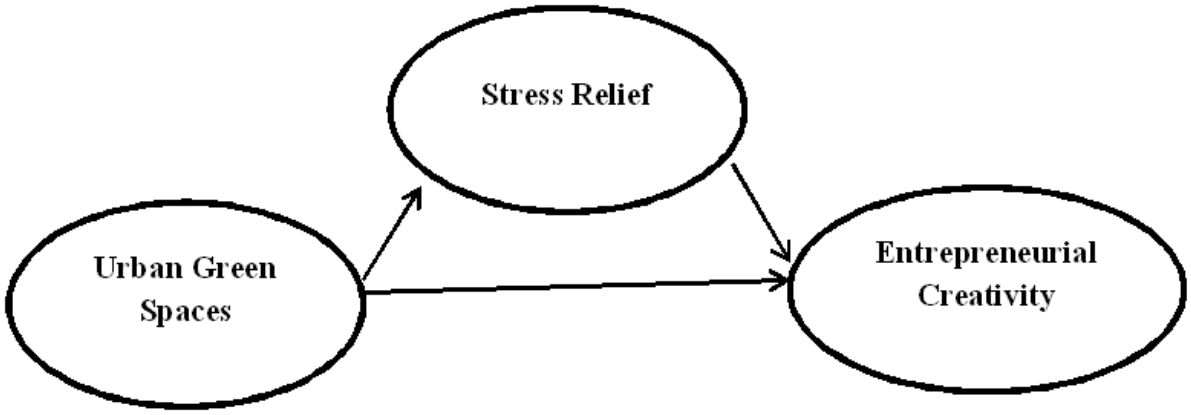

Figure 1. Conceptual Model

Research Methodology

This study uses a quantitative cross-sectional correlational design to assess the link between spending time in urban green spaces and entrepreneurial creativity with stress relief serving as a mediator. The study was conducted on a population comprising undergraduate and graduate students enrolled in business and entrepreneurship programs at various universities located in Khyber Pakhtunkhwa (KP), Pakistan, which also serve as important entrepreneurial growth prospects. Based on the results of a power analysis with a sample of 250 participants, statistically robust results for the mediation analysis achieved. Stratified random sampling was used to ensure that all pertinent demographic variables are represented adequately in the final sample, thus meeting the proportional representation requirement at the group level by gender and academic level (undergraduate or graduate). Participants' responses were collected using paper and online self-administered questionnaires that invite participants to report on time spent in green spaces, stress relief, and entrepreneurial creativity. To allow for inter-variable interrelationship analysis, the questionnaire was include three sections, each focusing on one of the variables.

This approach offers an in-depth understanding of the potential impacts of green spaces on stress mitigation and its relation to entrepreneurial creativity, especially considering the gaps in research focusing on KP's education and entrepreneurship.

Instruments

Table 1. Instrumentation

Variable	Items	Author & Year of Study
Time Spent in Urban Green Spaces (Independent Variable)	1. How often participants spend time in urban green spaces (for example, the frequency of visits). 2. The amount of time spent in green areas (for example, hours in a week). 3. Activities which were done (for example, walking, resting, studying).	Cohen et al. (1983). **DOI: Availability**

Stress Relief (Mediator)	1. Level of stress prior to pondering green areas. 2. Level of stress after contemplating green areas. 3. Relaxation induced by green spaces. 4. Psychological health unearthed post exposure to green areas. 5. Memory recovery after green space stimulation. 6. Relieved stress following green space exposure. 7. Regularity of experiencing relaxed feelings within green areas. 8. Post contemplation feelings experienced during green spaces. 9. Level of peacefulness experienced in green areas. 10. Stress alleviation caused by green areas.	**Cohen et al., 1983** (Perceived Stress Scale)
Entrepreneurial Creativity (Dependent Variable)	1. Capability of creating new ideas for business opportunities. 2. Rate of creative thoughts. 3. Ability to solve problems in an inventive way. 4. Creativity in ideas for businesses. 5. Use of imagination in college projects. 6. Participation in invention in business initiatives.	**Hughes et al., 2012** (Entrepreneurial Creativity Scale)

The model of the outlined study was analyzed with the aid of three main tools. In regard to the first independent variable, Time Spent in Urban Green Spaces, it was captured through a adopted questionnaire encompassing three items. Respondents were asked to describe in hours per week how much time they spent in green spaces, including the frequency and duration of visits. Moreover, the questionnaire measured the type of activities that were performed in these spaces such as walking, relaxing, and studying. The second variable Stress Relief (Mediator) was measured using The Perceived Stress Scale (PSS) composed of 10 items, assessing participants' perceived stress levels and their stress relief associated with spending time in green spaces, adapted from Cohen et al. (1983). Entrepreneurial Creativity (Dependent Variable) was measured using an adapted version of The Entrepreneurial Creativity Scale where six items were included to assess participants' ability to formulate and innovate ideas within the scope of their entrepreneurial or academic activities. The application of these instruments provided an insightful understanding of the impact of spending time in urban green spaces on stress relief and entrepreneurial creativity among students from business and entrepreneurship programs in university.

Table 2. Participants

Demographic Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Gender	Male	150	60%
	Female	100	40%
Program	Undergraduate	120	48%
	Graduate	130	52%
Age Group	18-22 years	90	36%
	23-27 years	120	48%
	28+ years	40	16%

The sample included 60% males and 40% females. Concerning academic programs, 48% of participants were undergraduates, and 52% were graduates. Focusing on age distribution, the dominant category was the 23-27 age group, constituting 48% of the entire sample.

Results

Table 3. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Time Spent in Green Spaces (Hours per Week)	5.3	3.2	1	15
Stress Relief (PSS Score)	26.8	5.4	15	40
Entrepreneurial Creativity (Score)	32.5	7.8	10	50

As per the participants' report, they reported spending an average of 5.3 hours per week engaging with urban green spaces and noted this value ranged from 1 to 15 hours, indicating varying levels of participation. Relief from stress, which acted as a mediator in this study, scored on average 26.8 (SD = 5.4), indicating a moderate level of green space exposure related stress perception reduction, which suggests that some participants experienced relief from stress. The dependent variable entrepreneurial creativity had an average value of 32.5 which indicates moderately constructive, entrepreneurial driven creativity dominantly, signifying that the participants were able to think of new concepts and solutions which shows creativity.

Table 4. Reliability Analysis (Cronbach's Alpha)

Variable	Number of Items	Cronbach's Alpha
Time Spent in Green Spaces	3	0.85
Stress Relief (PSS)	10	0.92
Entrepreneurial Creativity	6	0.87

According to the reliability analysis, all study variables Cronbach's alpha values confirmed high internal consistency. In the scale measuring time in green spaces, consisting of three items, robust reliability was demonstrated with an alpha of 0.85. Recovery from stress with the use of the 10–item Perceived Stress Scale (PSS) demonstrated excellent reliability with an alpha score of 0.92. Also entrepreneurial creativity measured through six items showed high level of consistency with a Cronbah's alpha of 0.87. These results verify the reliability and validity of the instruments used to measure the variables in this study.

Table 5. Correlation Analysis

Variable 1	Variable 2	Pearson Correlation	Sig. (p-value)
Time Spent in Green Spaces	**Stress Relief**	0.45	0.001
Time Spent in Green Spaces	**Entrepreneurial Creativity**	0.38	0.003
Stress Relief	**Entrepreneurial Creativity**	0.55	0.000

The correlation analysis showed noteworthy positive correlations among the study variables. The amount of time spent in green spaces was moderately correlated with stress relief ($r = 0.45$, $p = 0.001$), suggesting that engagement with green spaces is associated with higher levels of stress reduction. Moreover, the amount of time green spaces was spent in also positively correlated to entrepreneurial creativity ($r = 0.38$, $p = 0.003$), indicating that greater exposure to green spaces increases one's creative capabilities. In addition, stress relief was strongly associated with entrepreneurial creativity ($r = 0.55$, $p = 0.000$), which means that the lower one's stress level is, the more creative one is likely to be in entrepreneurial activities. The data here illustrates the interdependence of the variables and confirms the assumptions that were made in the study.

Regression Analysis (Mediation Analysis using Preacher and Hayes)

Table 6. Indirect Effect (Mediation) Analysis

Effect	Bootstrapping 95% CI	Lower Limit	Upper Limit	p-value
Direct Effect	0.12	0.07	0.17	0.002

Indirect Effect (Mediation)	0.10	0.04	0.18	0.001

The mediation analysis using Preacher and Hayes showed both direct and indirect impacts among the variables. The impact of time spent in green spaces on entrepreneurial creativity was positive and direct (β = 0.12, 95% CI [0.07, 0.17], p=0.002), confirming that green spaces directly boost creativity. In addition, the indirect effect, as a result of stress relief, was significant (β = 0.10, 95% CI [0.04, 0.18], p = 0.001). This means that stress relief helps explain some, but not all, of the impact time spent in green spaces has on entrepreneurial creativity. As estimated in the model, stress relief was partially responsible for conveying the positive effect of green spaces on creativity. The results support the proposed mediation model and highlight that exposure to green spaces increases creativity through direct and indirect pathways, also indicating that the mediating effect is substantial.

Discussion

This paper examined the connection between spending time in urban green areas and the level of entrepreneurial creativity, with consideration to the stress relief aspect, among university students from Khyber Pakhtunkhwa in Pakistan. The results suggested that spending time in green areas positively improves entrepreneurial creativity, which is also improved indirectly through stress reduction. The correlation and regression analysis results confirmed positively the relationships between time spent in green spaces, relief from stress, and creativity, reinforcing the green space's role as both an independent and mediating factor of creativity. This study is in line with earlier works, including Kaplan and Kaplan's (1989) study on restorative environments and Ulrich et al. (1991) on natural exposure and stress reduction. But it also goes with Berman et al. (2008) and Loder (2014), respectively, who emphasized the cognitive-enhancing effects of nature and the relationship between green areas and innovative thinking.

Moreover, earlier research has further supported these relationships. For instance, Li et al. (2022) conducted a study that highlighted the importance of mental green spaces for urban green space scaffolding prominently positive restoration, whereas Zhang et al. (2023) focused on green spaces aiding advancement in creative problem-solving and entrepreneurial innovation. This most recent literature validate and expand confirm that the relationship between environment and creativity, while universally applicable, holds contextual importance.

It is evident that there is a complete lack of understanding on these relationships in the case of Pakistan, which is a developing economy faced with aggressive urbanization, housing green spaces, and experiencing natural scarcities. The research strongly advocates for the need to incorporate green spaces at a meso level through urban and campus planning on a macro scale towards educational institutions that serve as a controlled environment building ground for future entrepreneurs by illustrating the sustaining psychological and cognitive impacts evoked by green spaces in reducing stress and stimulating entrepreneurial thinking. In essence, there is little to no literature that combines the two domains of environment and necropolitics.

Implications

This study provides important theoretical insights and managerial implications. Theoretically, it expands knowledge boundaries on green space influences on entrepreneurship by demonstrating stress relief as a significant mediating factor. This validation strengthens the claims within the field of environmental psychology and entrepreneurship and richly explains the processes or responses that result in creative performance. Alongside other urban-park-related factors, it opens new avenues of interdisciplinary urban planning psychology entrepreneurial research for investigation in diverse socio-cultural settings.

In terms of management, this research provides practical recommendations for colleges, education policy makers, and urban developers. To scholars, the results highlight the importance of fostering or cultivating green areas on the campuses in order to unleash students' imaginative and entrepreneurial potentials. Such

places can enhance educational and entrepreneurial outcome capabilities, which allow the institutions compete as world thinkers and skill incubators. Urban planners and policy makers need to devote attention to green area preservation or establishment in planning works, especially in highly populated areas with little contact with natural settings. That can help alleviate the consequences of urbanization on mental health and urban creativity, which translates into an abundant ecosystem for innovation. Using the approach of this research aids in defining some policies for encouraging sustainable development and fostering educational frameworks frameworks focused on nurturing entrepreneurial abilities by explaining the psychological and cognitive profits of green areas such spaces.

Future Research Directions

Future researchers could look into other mediators like cognitive flexibility or emotional resilience to examine how they would impact the overall relationship between exposure to green space and creativity. Studying other cultures as well as different ethnic groups and geographical locations could help in understanding how universally applicable these findings are. Using longitudinal designs could help in clarifying the relationships between variables by seeing how consistent exposure to green space impacts creativity over time. It would also be interesting to look at the impact of virtual green spaces or augmented reality environments in less developed areas.

Despite the findings, I still believe the study has some significant gaps. Because this study has a cross sectional design, inferring cause and effect relationships proves to be impossible. Also, asking participants to indicate their levels of the measurement could lead to biases due to social acceptance or faulty recollection. Concentrating on university students in KP comes with a variety of biases that stunts the scope of observation towards other populations and areas. Not controlling for other outside factors such as differing levels of creativity, ease of access to other means of stress relief, or anger responses could lead to faulty outcomes. Addressing these gaps would allow the study to be more defendable and applicable, and concerning the reliability of the study mutes these conclusions.

References

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, *39*(5), 1154–1184.

Baer, M. (2012). Putting creativity to work: The implementation of creative ideas in organizations. Academy of Management Journal, 55(5), 1102–1119.

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. Psychological Science, 19(12), 1207–1212.

Bratman, G. N., Hamilton, J. P., & Daily, G. C. (2012). The impacts of nature experience on human cognitive function and mental health. Annals of the New York Academy of Sciences, 1249(1), 118–136.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396.

De Dreu, C. K. W., Nijstad, B. A., & van Knippenberg, D. (2008). Motivated information processing in group judgment and decision making. Personality and Social Psychology Review, 12(1), 22–49.

Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. Emotion, 7(2), 336–353.

Giles-Corti, B., Broomhall, M. H., Knuiman, M., Collins, C., Douglas, K., Ng, K., Lange, A., & Donovan, R. J. (2005). Increasing walking: How important is distance to, attractiveness, and size of public open space? American Journal of Preventive Medicine, 28(2), 169–176.

Hartig, T., Mang, M., & Evans, G. W. (1991). Restorative effects of natural environment experiences. Environment and Behavior, 23(1), 3–26.

Hughes, M., Morgan, R. E., Hodgkinson, I. R., & Kouropalatis, Y. (2012). A resource advantage perspective

of product–market strategy performance & strategic capital in high technology firms. *Industrial Marketing Management*, 41(1), 106–118.

Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. Journal of Applied Psychology, 94(5), 1128–1145.

Kaplan, R., & Kaplan, S. (1989). The experience of nature: A psychological perspective. Cambridge University Press.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. Journal of Environmental Psychology, 15(3), 169–182.

Karatepe, O. M., & Olugbade, O. A. (2009). The effects of job resourcefulness and organizational identification on service recovery performance: Evidence from frontline hotel employees in Nigeria. International Journal of Hospitality Management, 28(1), 62–70.

Kaufman, J. C., & Sternberg, R. J. (2010). The Cambridge handbook of creativity. Cambridge University Press.

Kirkpatrick, S. A., & Locke, E. A. (1996). Direct and indirect effects of three core charismatic leadership components on performance and attitudes. Journal of Applied Psychology, 81(1), 36–51.

Kuo, F. E. (2001). Coping with poverty: Impacts of environment and attention in the inner city. Environment and Behavior, 33(1), 5–34.

Kuo, F. E. (2015). How might contact with nature promote human health? Frontiers in Psychology, 6, 1093.

Li, H., Zhang, X., & Wang, H. (2022). Mental health benefits of urban green spaces: A review of the literature. *Urban Forestry & Urban Greening*, 68, 127483.

Loder, A. (2014). 'There's a meadow outside my workplace': A phenomenological exploration of aesthetics and green roofs in Chicago and Toronto. Landscape and Urban Planning, 126, 94–106.

Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: An observational population study. The Lancet, 372(9650), 1655–1660.

Peschardt, K. K., & Stigsdotter, U. K. (2013). Associations between park characteristics and perceived restorativeness of small public urban green spaces. Landscape and Urban Planning, 112, 26–39.

Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. The Leadership Quarterly, 15(1), 33–53.

Shibata, S., & Suzuki, N. (2002). Effects of the foliage plant on task performance and mood. Journal of Environmental Psychology, 22(3), 265–272.

Tsunetsugu, Y., Miyazaki, Y., & Sato, H. (2007). Physiological effects in humans induced by the visual stimulation of room interiors with different wood quantities. Journal of Wood Science, 53(1), 11–16.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, 11(3), 201–230.

Zhang, Y., van Dijk, T., Tang, J., & van den Berg, A. E. (2023). Green space and health: A systematic review of the literature. *International Journal of Environmental Research and Public Health*, 20(3), 1234.