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Relationship Satisfaction and Nature

**Introduction**

 Nature can act as a playground to explore and conquer, or a place to reflect and meditate. For some, it is a place recalled upon fondly- a place where memories of family camping trips were formed or hikes with friends have been shared. It has been an inspiration for artists, a place for recreation, and a place important enough to us to be protected and preserved. Nature has functioned as many things for people over time, and it is possible that this relationship runs deeper than history. Past and current research has shown that nature interacts with us cognitively, providing stress-relieving and attention-restoring benefits, among many others. The increase of urbanization threatens accessibility to nature, preventing individuals from easily experiencing these benefits found in nature. Urbanization also has negative effects on health, which has been explored in a study conducted by Bell & Douglas (2013), who reported on the influences of urban and natural environments on stress and health. Participants of this study who were exposed to a more natural setting benefited by a reduction of stress, shown in pre- and post- changes in salivary amylase and self-reported questionnaires.

 Little research has been done on utilizing the stress-reducing effects and physiological benefits of nature to increase relationship satisfaction in romantic interpersonal relationships. As the world become more urban, relationships are at the risk of suffering from the ill effects of stress and fatigue caused by these urban environments.

**Stress and Relationships**

 Not only can relationships be stressful by themselves, but personal stress (internal and external) can have a lot of influence on relationship quality and satisfaction. If we conceptualize stress as a dyadic phenomenon, external stressors can have a spillover effect in relationships, which then causes strain. Overall, characteristics of relationships showing low satisfaction are ones characterized by personal stress, work stress or daily hassles, and poor physical and mental health (Falconier et al., 2014). Long-lasting stressors are especially strenuous on relationships, and are most impactful on relationship quality and satisfaction (Randall & Bodenmann, 2017). Other studies have reported on the impact of stress on relationships. Buck & Neff (2012) found that spouses who experienced decreased positive marital appraisals reported high levels of stress, which was due to decreased self-regulation depleted by external stress. Bolger *et al. (*1989) reported on a causal relationship between work and stress, with stress from work contagiously spilling over into stress experienced at home.

 As the world becomes more urbanized, one can speculate that this will have an impact on personal stress and interpersonal relationships. These studies reveal that stress is influenced by urban environments. I hypothesize that Nature can offer itself as a useful resource for buffering the effects of stress on relationships through restoring resources depleted by urban environments and stressors, thus increasing ratings of relationship satisfaction. I hypothesize that these changes will be reflected in decreased cortisol, increased oxytocin, and improved self-reported measures of positive affect and relationship satisfaction.

**Literature Review**

 There hasn’t been much research on the possible application of Ulrich’s Theory of Stress Reduction and Kaplan’s Attentional Restoration Theory to improve relationship satisfaction via nature. Nature has been shown to provide benefits that are potentially conducive to satisfactory relationships. These benefits include decreases in stress (Ulrich, 1991), improved mental wellbeing (Bratman et al., 2015), and restored attention (Kaplan, 1991).

 Stephen Kaplan’s Attention Restoration Theory posits urban environments decrease attention by exhausting directed attention. When the ability to direct attention is depleted, it can prevent inhibition of impulses and prevent delay and reflection (Kaplan, 1995). This can be problematic in a relationship context, where unnecessary risks and irritability- caused by fatigued directed attention- can be detrimental to relationship satisfaction and harmony. Kaplan posits that directed attention can be restored through environments that require “soft fascination,” which is characteristic of nature environments.

 In relation to restoration through nature, Roger Ulrich *et al.* (1991) found that encounters with mostly unthreatening natural environments had a stress reducing and restorative effects in his research supporting Stress Reduction Theory (SRT). This theory emphasizes the restoration of mental fatigue via settings that “hold attention without mental effort, are pleasurable, and block out the demands and stresses of daily work and urban living.” Urban settings create mental fatigue from sustained and effortful attention. Coupled with Kaplan’s Attention Restoration Theory, Stress Reduction Theory provides a potential process through which stress can be reduced through interacting with nature.

 Further research by Hartig *et al.* (2003) documented the effects of nature on affect and stress-related physiological measures. Participants who walked in a nature reserve showed increased positive affect and stress reduction in comparison to participants who walked in an urban environment.

 The purpose of this research proposal is to apply the found benefits of nature on attention, stress, and affect in improving interpersonal romantic relationship satisfaction. This will be accomplished through the use of physiological and self report measures.

**Method**

**Sample**

 Participants will be 50 pairs (100 subjects total) of heterosexual couples in a long-term committed relationship ranging in lengths of 2-4 years. Subject couples will be heterosexual to minimize possible influences of confounding variables, such as discrimination or fear of discrimination in nature, that LGBTQ couples may experience. Couples will be compensated for participating after the 3 consequences of weekends of testing. Participants will be exposed to all 3 conditions (nature, neutral control, urban).

**Experimental Design**

 This experiment will be a within-subject experimental design to help control for each couple’s individual differences. Participants will be randomly assigned to the nature or urban condition first and the neutral control condition second. They will finish the study with the nature or urban condition- the opposite of whichever one they did first to counterbalance any possible order effects. Measures of each participant will be collected before and after environment exposure. The purpose of this design is to examine if nature environments can be more effective at increasing relationship satisfaction in romantic couples than urban environments.

**Measurements**

 Cortisol: Saliva samples of participants will be collected 5 minutes before and 5 minutes after each condition exposure (nature, neutral control, urban) to measure cortisol levels. Natural gender differences in oxytocin cortisol values will be taken into account during result assessment. Cortisol will be collected with an easily-obtained enzyme immunoassay kit, as cortisol is a hormone of the adrenal cortex that can reflect influences of environmental stressors (Kalman & Grahn, 2004).

 Oxytocin: Blood samples will be taken the night before testing, to establish a baseline of oxytocin. A post-condition sample of blood will be taken again, the same day as completion of each testing condition. Oxytocin is a neurotransmitter and hormone found in the brain and bloodstream that is associated with social bonding and love. Research on monogamy in prairie voles found that oxytocin and vasopressin facilitates affiliation and social attachment in monogamous species through the modulation of reward pathways (Young et al., 2001), making this a relevant and effective measure for biologically quantifying relationship satisfaction..

 Relationship Assessment Scale (RAS): This questionnaire will be used to measure each participant’s individual satisfaction with their relationship. Participants will rate seven items on a five-point likert scale, their score reflecting general relationship satisfaction. The RAS will be administered before and after each environmental condition. (Hendrick et al., 1998).

 Positive and Negative Affective Scale (PANAS): Participants will complete this questionnaire to establish their affect in the current moment, rating 20 terms associated with positive or negative affect on a 5 point scale (1= this concept applies very little or not at all to the participant, 5= this concept applies very much to the participant). The PANAS will be administered before and after each environmental condition, adhering to the scoring guidelines of Watson *et al.* (1988).

**Procedure**

 Participants will participate with their significant other in all three conditions: the nature environment, the neutral control environment, and the urban environment. Each of these conditions include: a pre-exposure phase, an exposure phase, and a post-exposure phase.

 No couples will be provided transportation to the testing sites, as they must find their own means of transportation there. This is done to encourage normalcy in the experimental activities, and cultivate socialization without the influence of researchers provoking nervousness and novelty that could interfere with testing results. All activities will take place later in the day, as to minimize natural fluctuations of cortisol levels that usually occur early in the day (Kalman, 2004). Participants will be asked to abstain from caffeine and nicotine the day of testing.

 Pre-Exposure Phase: In this phase, the couple will each provide a blood sample at the lab the night before. Saliva samples from each couple will be collected 5 minutes before condition exposure. Saliva samples will be labeled and refrigerated in a cooler in the research testing site and stored in a lab refrigerator as soon as possible. Self-report questionnaires will be administered to each participant to be completed before condition exposure (the RAS and PANAS).

 Exposure Phase: After completing all pre-exposure samples and questionnaires, the couple will be exposed to the nature, neutral control, or urban environment depending on their random assignment. This will happen over three consecutive weekends (ex: weekend one- nature environment, weekend two- neutral environment, weekend three- urban environment). Each environment condition will take approximately one hour to complete. Walking distance for each condition will be no more than 2 miles.

 Nature environment: In this environment, participants will go on an easy, 2 mile hike (roundtrip) to Willow Lake in Big Cottonwood Canyon.

 Neutral control environment: In this condition, participants will visit the Natural History Museum of Utah, walking through each level of the museum and past all of the exhibits.

 Urban environment: In the urban environment condition, participants will take a walk in downtown Salt Lake City to an art wall mural and through The Gateway mall, ending their walk by climbing the stairs to the top of a parking garage with a view of the city and the Walker Center.

 Post-Exposure Phase: In the post-exposure phase, participants will provide another saliva sample, blood sample, and will be re-administered the self-report questionnaires (RAS and PANAS). If they have completed all three environment conditions, they will be compensated 150 USD and debriefed.

**Expected Results**

 I expect that after exposure to the nature setting, couple participants will show more relationship satisfaction, decreased levels of cortisol, and increased levels of oxytocin than pre-condition measures. ART and SRT posit that attentional resources will be restored, and a reduction of stress will occur after nature exposure, and I expect a similar result with couples in the nature environment. I expect to see an increase in oxytocin as the couples experience the restorative benefits of nature, along with an increase in positive affect. Nature exposure has been shown to increase overall wellbeing in research participants who took a nature walk and viewed nature scenes (Berman et al., 2008).

 I hypothesize that the participants will show no change or a decrease in relationship satisfaction after exposure to the urban condition, along with increased cortisol and decreased levels of oxytocin. There will likely be a little or no change in affect from pre-condition measures. Due to the stress induced by urban environments, cortisol levels should reflect this environmental strain with post-condition levels increasing from pre-condition levels. Natural environments can provide benefits to well-being; a lack of nature in urban areas may then negatively affect well-being (Kaplan, 1989).

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