



## Example of Abstract

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Title: Changes in well-being immediately after urban park visit

### Abstract

Urban parks have been recognized as key neighborhood places that provide residents with opportunities to experience nature and engage in various activities. Through contact with the natural environment and engagement in health-promoting and/or social and recreational activities in parks, users experience physical and mental health benefits such as stress reduction and recovery from mental fatigue (Twohig-Bennett & Jones, 2018). A growing body of evidence suggests that individuals who engage in a short-term visit (e.g., less than a couple hours) to an urban park also experience physiological and psychological restorative benefits. These benefits include enhancement in well-being (increase in positive affect and decrease in negative affect), reduction in emotional stress, and relief from mental fatigue (Kondo et al., 2018). In addition, several systematic reviews support the synergistic beneficial effect of engaging in short-term physical activity in a natural environment when comparing different experimental conditions, including in urban parks, on the enhancement of well-being (Barton & Pretty, 2010; Thompson Coon et al., 2011). However, it is unclear whether the improvement in well-being after a short-term visit to an urban park is attributed to physical activity or non-physical restorative activities such as social interaction, physical presence within the natural environment (i.e. some form of passive / sedentary activity), or a combination of different activities. Studies have investigated the impact of physical activity in a natural environment (i.e., green exercise) on the improvement of mental health outcomes (Bowler et al., 2010; Thompson Coon et al., 2011), but few examine what amenable contributing factors (e.g., activity intensity during a park visit, duration of visit, or both) lead to an improvement in mental health after a short exposure to natural green spaces such as urban parks. The purpose of this study is to determine the scale of changes and what factors contribute to the change (i.e., improvement) in subjective well-being (including affect and life satisfaction) immediately after a short-term visit to a neighborhood urban park in an uncontrolled condition. This study involved a one group pretest-posttest survey research design. Adult visitors of urban parks (convenience sampling) were approached by research assistants at park entrances or in the parking lot to provide information regarding study objectives and to seek consent to participate. Participants were asked to complete a questionnaire of demographic information and measures related to SWB, to provide a saliva sample before they enter the park, and to wear an Actigraph accelerometer or to use their smart phone to track their level of physical activity (number of steps) while in the park. Research assistants waited at the entrance or the parking lot until the participant completed the park visit to collect the accelerometer or to record the number of steps registered on their phone, ask for completion of the same SWB measures, and provide another saliva sample as they did prior to their park visit. SWB was assessed using two standardized measures: the Satisfaction with Life Scale (SWLS), 5 items, which is rated on a 7-point Likert scale, ranging from 1 = strongly disagree to 7 = strongly agree, and the Positive Affect and Negative Affect Schedule (PANAS), 10 items. The PANAS consists of 5 positive and 5 negative adjective words, which are rated on a 5-point Likert scale, ranging from 1 = never to 5 = always.  $SWB = SWLS + (Positive\ Affect - Negative\ Affect)$ . Final data analysis is still in process at the time and results of salivary cortisol (stress hormone) level analysis is pending. However, analysis of 169 visitors from 12 urban parks indicated that there was a significant improvement in SWB, PANAS and SWLS scores of park visitor participants from before to after their visit. There were 66.9% of participants (n=113) whose SWB scores improved after the park visit. There were 33.1% of participants (n=56) whose SWB scores did not improve after the park visit, with 9.5% (n=16) showing no change, and 23.7% (n=40) deteriorated. The number of steps recorded in the accelerometer and the amount of time spent in the park were not associated to the improvement in SWB scores after the park visit. This study may suggest that urban green space is associated with enhancement of SWB beyond



being physically active in a natural environment as well as visit duration which can have beneficial effects on the visitors' mental health. It is recommended that design of the park space should attract people to visit urban parks.