**Reproducibility Project: Template for Replication Report**

**Open Science Collaboration**

Replication reports should all use this template to standardize reporting across projects.  These reports will be public supplementary materials that accompany the summary report(s) of the aggregate results.

Other useful documents

* [Research guide for conducting replication projects](https://docs.google.com/document/d/1b8wlI8RqR07aOJKv5qMRTGCSi10ntb7glL7gyzUEE3M/edit)
* [Executive summary: Detailed description of the reproducibility project](https://docs.google.com/document/d/1FcWLfASVXPkLuTVQmbZKvpkPsgrW8XKPGfWJqnSnmeM/edit)
* [Possible interpretations of a failure to replicate](https://docs.google.com/document/d/10x-uzlQ2vIQgsHNum2U9VC0M289lXZozR41MeHqFy2M/edit)
* [Spreadsheet for documenting replication projects](https://docs.google.com/spreadsheet/ccc?key=0AvIo2znxWnxZdERIS2xqNnNxUUZRRTB5LVJxckhiY3c)
* [Open Science Framework discussion group](http://groups.google.com/group/openscienceframework)
* [Analysis plan](https://docs.google.com/document/d/1tsG8m5qKv70xkoaYIKoEmNBvwqQhhWHc9jVhTbj6vIQ/edit)
* [Report draft](https://docs.google.com/document/d/1ohSPyb0_OYssMX97Rau0jE5FnPOcMXdQjNRs4T8BYOw/edit)

-- REPORT TEMPLATE --

Replication of Cohen, M. a, Alvarez, G. a, & Nakayama, K. (2011). Natural-scene perception requires attention. *Psychological Science*, *22*(9), 1165–72. doi:10.1177/0956797611419168

Daniel Birman

dbirman@stanford.edu

Introduction

In everyday life we feel a direct and undeniable connection between attending to something and our clear awareness of it. But is this connection required? As Cohen et al. ask, “Is visual attention required for visual consciousness?” (Cohen, Alvarez, & Nakayama, 2011). Despite considerable evidence that visual attention was required for visual consciousness (Mack & Rock, Irvin, 1998) a number of researchers have shown that perception of the “gist” of a scene was possible without top-down selective attention (Koch & Tsuchiya, 2007; Lamme, 2003; Li, VanRullen, Koch, & Perona, 2002; Reddy, Reddy, & Koch, 2006; van Boxtel, Tsuchiya, & Koch, 2010). A number of researchers have since taken aim at these findings, showing that under sufficiently constrained conditions awareness of gist perception is indeed degraded by selective attention (Cohen et al., 2011; Mack & Clarke, 2012). These more recent experiments have utilized more careful methods, with an emphasis on quantifying the attentional load necessary to impair gist perception. For example, Cohen et al. demonstrated that multiple object tracking impairs gist perception only within a range of difficulty—not so difficult that participants cannot complete the task, but sufficiently difficult that their entire focus of attention is on task demands. In addition, the authors reported that many subjects were aware of an event or change occurring (i.e. they were not change blind) but could not report the contents of the change (i.e. they experienced inattentional blindness). Taken together these findings suggest that visual consciousness can be impaired under high attentional load.

In this study we attempted to replicate the main finding of Cohen et al. and Mack & Clarke, which showed that under sufficient attentional load visual consciousness of scene gist is impaired. We replicated Experiment 1b from Cohen et al, in which a main RSVP task, with letters/digits appearing at fixation, was presented in repeated short trials. The main task required considerable focal selective attention to complete. Throughout the trial an aggressive mask image was continually updated in the background, replaced by a natural scene for one to three frames. Mack and Clarke explain that this design philosophy has a number of parameters that interact to degrade scene gist perception: (1) scene presentation length, (2) presentation location relative to focal task, (3) scene features (e.g. color, contrast, contents), (4) focal task difficulty, (5) focal task modality (Mack & Clarke, 2012). We replicated Cohen et al. identically using a scene presentation length of 67 ms, a presentation size filling the background completely, color scenes in full contrast, and focal task difficulty modulated per trial (0-4 target digits per stream, 12-17 characters per stream). Our expectation was that this would induce inattentional blindness in ~50% of the study population, with the expectation that conversion to an online design would slightly affect the results.

Methods

**Power Analysis**

The original study used a sample size of

Original effect size, power analysis for samples to achieve 80%, 90%, 95% power to detect that effect size.  Considerations of feasibility for selecting planned sample size.

**Planned Sample**

    Planned sample size and/or termination rule, sampling frame, known demographics if any, preselection rules if any.

**Materials**

    All materials - can quote directly from original article - just put the text in quotations and note that this was followed precisely.  Or, quote directly and just point out exceptions to what was described in the original article.

**Procedure**

    Can quote directly from original article - just put the text in quotations and note that this was followed precisely.  Or, quote directly and just point out exceptions to what was described in the original article.

**Analysis Plan**

    Can also quote directly, though it is less often spelled out effectively for an analysis strategy section.  The key is to report an analysis strategy that is as close to the original - data cleaning rules, data exclusion rules, covariates, etc. - as possible.

**Differences from Original Study**

Explicitly describe known differences in sample, setting, procedure, and analysis plan from original study.  The goal, of course, is to minimize those differences, but differences will inevitably occur.  Also, note whether such differences are anticipated to make a difference based on claims in the original article or subsequent published research on the conditions for obtaining the effect.

(Post Data Collection) Methods Addendum

**Actual Sample**

    sample size, demographics, data exclusions based on rules spelled out in analysis plan

**Differences from pre-data collection methods plan**

    Any differences from what was described as the original plan, or “none”.

Results

**Data preparation**

    Data preparation following the analysis plan.

**Confirmatory analysis**

    The analyses as specified in the analysis plan

**Exploratory analyses**

Any follow-up analyses desired (not required).

Discussion

**Summary of Replication Attempt**

Open the discussion section with a paragraph summarizing the primary result from the confirmatory analysis and the assessment of whether it replicated, partially replicated, or failed to replicate the original result.

**Commentary**

Add open-ended commentary (if any) reflecting (a) insights from follow-up exploratory analysis, (b) assessment of the meaning of the replication (or not) - e.g., for a failure to replicate, are the differences between original and present study ones that definitely, plausibly, or are unlikely to have been moderators of the result, and (c) discussion of any objections or challenges raised by the current and original authors about the replication attempt.  None of these need to be long.