Round 1 Review reports

Editor: Yuki Yamada

Your paper "A review of the footstep illusion" which you submitted to Journal of Illusion has been reviewed. The reviewers' comments are included in the bottom of this email.

The reviewers have recommended that your paper cannot be accepted for publication in its current form. However, we would like to encourage you to submit a revised version of the paper that addresses the reviewers' comments. Please note that resubmitting your manuscript does not guarantee eventual acceptance, and that your resubmission may be subject to another round of reviews.

The two reviewers agree that the conclusion section should be expanded. In my opinion, the introduction may be too abrupt, as the second reviewer says. In the introduction and conclusion, it might be good to have an overarching story about the content of the paper. That is, if the introduction includes a brief description of why the footstep illusion is treated here (or why the illusion is interesting) and how the paper is structured, the reader will get a better picture of the paper. Moreover, I think the role of this manuscript as a review article would be enhanced by including the possibility of further development of this illusion and its relation to other illusions in the conclusion. On the other hand, the journal does not necessarily require the kind of theoretical considerations that the one reviewer mentioned: we do not preclude the authors from mentioning the theory, but it is beyond the scope of this journal to talk about the theory too long. You may mention this statement of mine in preparing your response to the reviewer on this point.

From my point of view, the illusions presented in this paper are very powerful and attractive. I hope you will resubmit a revised version of the paper.

Reviewer: Piers Howe
Completed: 2020-10-07 07:21 PM
Recommendation: Revisions Required

Reviewer Comments
For author and editor
I thought that this article is timely and well-argued. It comprehensively reviews the footsteps illusion as well as several other related illusions. I think it provides a more plausible explanation for the footsteps illusion than that provided by Howe et al. (2006). As such, I think it makes a significant contribution to the literature. Below I list some fairly minor points that I would like to be addressed.

p. 19. What is the difference between movie 13 and movie 14? In movie 13 shouldn't the background be stationary because the illusion is not meant to be inverted?

p. 35 Typo: Wrote "agree with it" should be "agree with them".

p. 40 I don't understand how movie 38 was constructed. Figure 14 shows that each segment of phi motion contains 4 frames and each segment of reversed phi motion contains 4 frames, so how were the segments arranged to construct movie 38? Did two of the rectangles started with phi motion (i.e. 4 frames of phi motion) then immediately switch to reverse phi motion (for 4 frames) before returning to phi motion for 4 frames etc, while the other two rectangles alternated between phi motion and reverse phi motion in anti-phase with the first two rectangle? If so, please state this.

p. 42. Only 26 movies were listed (Movies 3, 4, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, and 36) – it should have been 27. Incidentally, these movies do not correspond to the movies listed in Table 1.

p. 46. Please rotate panel b by 180 degrees so that for all panels the upper two

rectangles appear wider apart than the lower two. Currently, Figure 16 is somewhat confusing.

p. 46. The is no discussion and the conclusion is just one (short) paragraph. There is more to say. Please expand the conclusion, summarising your main findings and your main conclusions.

Reviewer: Hiroyuki Ito
Completed: 2020-12-02 04:47 AM
Recommendation: Revisions Required

Reviewer Comments
For author and editor
The Review Report by Kitaoka and Anstis summarizes a wide variety of variants of the footsteps illusion depicted in 38 videos, and provides conclusions regarding the causes of the illusion. The included videos are remarkable, and provide a catalogue of the amazing variants of the footsteps illusion. The quality of the demonstrations meets the criteria of Journal of Illusion. The authors present a new style of review paper, which may be suitable for a new journal with a unique format. However, the paper may be confusing for readers of conventional research articles. For example, the paper does not include an introduction section describing the motivation for writing the review, an explanation of why the phenomenon is unique and important in illusion research, a description of opposing theories, or an outline of the goal of the paper, as would typically be included in a review paper. In addition, the structure of the paper is difficult to grasp, mainly due to the absence of an introduction section presenting a framework for the discussion or describing possible factors affecting the illusion. To address these issues, I wish to request that the authors implement several revisions before the paper is published.

Please add an introduction section that elaborates on the first section of the present manuscript to explain the phenomenon, motivation, significance, factors, theories, and goals of the research, as noted above. However, because this is an article in a new journal, if the editors believe that this conventional content is unnecessary for the journal style, I will accept the decision.

The structure of the paper is not easy to understand. Each section is easily understood with the help of excellent demonstration videos. However, the hierarchical relationships among sections or phenomena are difficult to recognize. Because a large number of independent sections appear one after another, readers may feel that the conclusion is suddenly presented. The repeated titles of sections, i.e. “the geometrical illusion” on p9 and “the geometrical illusion involved in the footstep illusions” on p45, are confusing. In addition, the section “a combined explanation” (p12) is confusing because the authors’ explanation of the illusion has already been provided in an early part of the paper. Therefore, I feel that the manuscript is implicitly divided into two parts, with Part 1 explaining the basic footsteps illusion ending on around p13, and Part 2 presenting the variants of the illusion starting from around p14. If this is true, the structure should be expressed more clearly.

It is difficult to understand which phenomena lead the authors to their final conclusion. I believe that a discussion section is needed to summarize the paper and generally discuss the theories or factors presented before presenting the final conclusion. A Venn diagram (or tree diagram) of the presented phenomena would be helpful for showing the relationships among the phenomena. A graph showing ratings (Figure 15) indicates the order of the amount of the perceptual effects, but does not show their relationships from a phenomenological or theoretical point of view.

Movie 21 needs some adjustments. The caption notes that the contrast of the high-contrast stripes is higher than that of the high-contrast squares. On my LCD display

using Google Chrome, the difference in contrast is barely visible. As a result, the high-contrast squares do not appear to move on the high-contrast stripe, even when I view the square in central vision. However, I understand that it is not possible to adjust the contrast difference so that it will be visible when played with every software program and on every type of display without calibration. Thus, if the authors believe that the present movie already has the optimal parameters, I will not insist on these adjustments.

Movie 37 needs more explanation. This movie is intended to demonstrate the pausing-and-sticking illusion. However, this movie also could be a demonstration of the streaming-bouncing phenomenon. I mainly saw bouncing motion in the movie, and therefore, did not observe pausing or sticking. If this movie is used as it is, some explanation should be added.

The authors should decide whether “Footstep illusion” or “Footsteps illusion” is more appropriate terminology. This may seem to be a trivial detail, but Google Scholar, for example, distinguishes the two, and “Footsteps illusion” appears to be substantially more widely used according to the search results of Google Scholar. I believe that the illusion was originally called the “footsteps illusion” and that the authors themselves have used “footsteps illusion” elsewhere. Similarly, although “reversed phi” is used throughout the manuscript, “reverse phi” also appears in the text (the last sentence on p30, the second sentence on p35, and the last sentence on p41).

The authors noted “The results are shown in Figure 15, which confirms the phenomena described so far (the last sentence on p42)”. However, it is not obvious what is confirmed by Figure 15. Please explain what readers should understand from Figure 15.

Description of future prospects may be helpful. The authors concluded that the footsteps illusion and its variants are attributed to a geometrical illusion or an extinction effect in addition to the difference in perceived speed depending on edge contrast. However, the authors may still believe that more research on the footsteps illusion is needed. As a review paper, it may be appropriate to discuss future prospects (e.g., what is left to be studied about the illusion, how the illusion could be related to other visual phenomena, and the limitations of this review). But again, if the editors believe that this conventional content is unnecessary for the journal style, I will of course respect the decision.