The Return-Trip Effect: Why the Return-trip Often Seems to Take Less Time

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Abstract

Three studies confirm the existence of the return-trip effect: the return-trip often seems shorter than the initial-trip, even though the distance travelled and the actual time travelled is identical. A pretest shows that people indeed experience a return-trip effect regularly and the effect was found on a bus trip (Study 1), a bicycle trip (Study 2), and when participants watched a video of someone else travelling (Study 3). The return-trip effect also existed when another, equidistant route was taken on the return-trip, showing that it is not familiarity with the route that causes this effect. Rather, it seems that a violation of expectations appears to cause this effect.

The Return-Trip Effect: Why the Return-trip Often Seems to Take Less Time

When we return from a conference, the return-trip often seems shorter than the initial-trip. This is odd, as the distance travelled and the actual time travelled is usually identical. Here we investigated the existence of a return-trip effect and explored two possible causes of this phenomenon. If a return-trip effect exists, one possible cause might be an increase in familiarity and predictability. Previous research has found that novel tasks are often remembered as taking longer than they actually do, while familiar tasks are remembered as taking less time (Avni-Babad & Ritov, 2003; Boltz, Kupperman & Dunne, 1998; Hinds, 1999; Roy & Christenfeld, 2007). Similarly, tasks that are unpredictable are remembered as taking longer than similar coherent or predictable tasks (Boltz, 1993; 1995; 1998). The unpredictability of the initial leg of the trip may make it so that it is remembered as being overly long. Conversely, the return-trip is remembered as being short because it is now more familiar and predictable.

Alternatively, the return-trip effect could be due to a violation of expectations. People often predict that tasks will take less time than they actually do (Buehler, Griffin and Ross, 2002; Kahneman & Tversky, 1979; Roy, Christenfeld, & McKenzie, 2005). In general, people are fairly inaccurate when estimating either how long things have taken in the past (Block & Zakay, 1997; Burt & Kemp, 1991; Poynter, 1989; Wallace & Rabin, 1960) or will take in the future (Buehler, Griffin and Ross, 2002; Roy, Christenfeld, & McKenzie, 2005). It may be that people have an expectation for a trip that is overly short, leading to a violation of expectation when they take the trip. Hence, the initial-trip takes longer than expected. For the return-trip the expectation is likely to be based on the experience of the (disappointingly long) initial trip. This leads to an upward adjustment in expectations for the return-trip that is, happily, unmet. The return-trip, therefore, feels shorter than the initial trip. Here we try to

establish whether or not there is a return-trip effect and if this might be due to a shift in familiarity or expectation.

Before turning to the studies, a pretest was conducted to test whether people actually experience this phenomenon in their daily life. Fifty-six students (43 females, $M_{age}$ = 19 years) indicated whether they "sometimes feel that the return-trip seems shorter than the initial-trip" and whether they sometimes feel that it seemed longer, on scales from 1 (never) to 7 (always). In comparison to the initial trip, participants more often reported that the return-trip felt shorter ($M$ = 5.23, SD = 1.36) than that it felt longer ($M$ = 3.59, SD = 1.80), *paired-sample t*(55) = 4.21, $p$ < .001, $r^2$ = .24. When given a forced choice about whether the initial-trip or the return-trip tends to feel shorter, participants were almost three times as likely to indicate that the return-trip tends to feel shorter (73% chose the return-trip versus 27% for the initial-trip). Similar to our own experiences, participants felt that a return-trip effect occurs frequently. The return-trip effect was further examined in a field study (Study 1), a field experiment (Study 2), and a controlled lab experiment (Study 3).

## *Study 1*

In Study 1, the return-trip effect was tested in a real-world situation and possible explanations for the phenomenon were explored. Sixty-nine participants (57 females, $M_{age}$ = 33 years) who had just returned from a day trip by bus from either a housekeeping fair (a large event where people received free goods related to housekeeping) or the Efteling (a large theme park) indicated which part of the trip felt longer. We took care to only include participants for whom the initial and return-trip actually took the same time (which varied between 25 and 120 min)[1] and who were awake during both trips. After the return-trip ended, the participants indicated how long they felt that the return-trip took compared to the initial-trip on an 11-point scale from -5 (a lot shorter) to +5 (a lot longer). Participants exhibited a

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[1] How long the trip took had no influence on any of our measures, all βs < .15, *p*s >.2.

return-trip effect with the return-trip feeling like it took less time than the initial-trip, $M = -0.55$, SD $= 2.16$, with an average response significantly lower than 0, $t(68) = 2.12$, $p = .04$, $d = 0.25$.

To examine the influence of trip familiarity/predictability on the return-trip effect, participants also indicated the extent to which they recognized certain waypoints on the return-trip that they had seen on the initial-trip on a scale from 1 (none) to 9 (a lot), $M = 5.32$, SD $= 2.15$. A regression analysis shows that how much they recognized along the way (as a measure of familiarity) was unrelated to the return-trip effect, $\beta = .15$, $t(67) = 1.21$, $p = .23$; recognizing more waypoints during the return-trip did not influence the perception that the return-trip took less time than had the initial-trip.

To examine the effect of expectations on the return-trip effect, participants indicated whether the initial-trip took shorter or longer than they had expected on an 11-point scale from -5 (much shorter) to +5 (much longer). On average, participants indicated that the initial-trip took longer than they had expected, $M = 0.59$, SD $= 2.27$, which differs from 0, $t(68) = 2.17$, $p = .03$, $d = 0.26$. Furthermore, this violation of expectations predicted the return-trip effect: the more travelers thought that the initial-trip took longer than they had expected, the more they felt that the return-trip took less time than the initial-trip did, $\beta = -.27$, $t(67) = 2.25$, $p = .02$.

*Study 2*

Study 2 attempted to replicate the findings of Study 1 using a different task. In Study 1, participants' familiarity with the return route, as measured by the number of waypoints recognized, did not influence the return-trip effect. However, this measure might not have accurately or fully captured their familiarly with the return route. Therefore, the possible role of familiarity in the return-trip effect was examined in Study 2 by having participants either return by the same or by a different, equidistant route.

*Method*

Ninety-three first year students (67 females, $M_{age}$ = 19 years) at a get-to-know-each-other event at the start of the academic year travelled by bike from a base camp (where they had spent one night) to a nearby forest to play some games for about two hours. Participants travelled in small groups of 5-10 participants and followed someone who knew the way (who was not included in the sample). Participants were randomly assigned to travel along one of two equally long routes on the initial leg of the trip (route 1 = 9.23 km, route 2 = 9.19 km, that in a pretest both took 35 minutes). A separate group of participants (a control group) travelled the initial leg via route 1 (n = 10) or route 2 (n = 8). They were asked at the end of the initial trip how long it had felt to them in minutes. They confirmed that both routes felt equally long, $M_{route1}$ = 41.5 min, $M_{route2}$ = 42.5 min, $t(16)$ = 0.24, $p$ = .83, $d$ = 0.10.

For the main group of participants, we manipulated whether they returned by the same route initially travelled (n = 32) or by the other one (n = 50)[2]. After participants arrived back at base camp, they filled out a questionnaire measuring their time perceptions of the initial and return trip. All estimates were given after both trips were completed so that participants on each leg of the trip were unaware that they would be estimating duration (knowing that an estimation will be required can change time perception; Block & Zakay, 1997).

*Results*

We conducted a 2×2 mixed-model Type III ANOVA with Same Route vs Different Route as a between-subjects variable and time estimate (in minutes) of initial trip vs return trip as a within-subjects variable. Participants exhibited a clear return-trip effect, estimating that the initial-trip took longer (44.3 minutes) than the return-trip did (36.9 minutes), $F(1, 80)$ = 19.02, $p < .001$, $\eta_p^2$ = .19. Note that the estimates for how long the initial-trip took ($M$ = 44.3 min) did not differ from the estimate of the control group ($M$ = 41.9 min) who made a

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[2] Eight participants were excluded from the analysis, as they got lost during the return-trip. Three more were deleted because multivariate outlier analysis indicated that their responses deviated strongly from the responses of other participants.

time-estimate directly after the initial-trip, $t(98) = 0.78$, $p = .44$, $d = 0.16$. Even though participants who completed the full experiment gave estimates for the initial leg after a long delay, their estimates did not differ from the control group that estimated duration directly after completing the trip. As further evidence for the return-trip effect, how long the return-trip felt to participants ($M = 36.9$ min) was shorter than the estimate the control group made for how long the initial trip felt ($M = 41.9$ min), $t(98) = 2.06$, $p = .04$, $d = 0.42$.

Varying the return route allowed us to directly examine the role of familiarity in the return-trip effect. First, there was an unexpected main effect of condition showing that participants who took a different route on the way back made longer estimates for both the initial-trip and the return-trip (42.3 min on average) than did participants who returned by the same route (38.2 min), $F(1, 80) = 5.34$, $p = .02$, $\eta_p^2 = .06$. Importantly, however, the magnitude of the return-trip effect was not significantly different for participants that returned either by the same or by a different route, $F(1, 80) = 1.77$, $p = .19$, $\eta_p^2 = .02$. While a lack of familiarity might have caused participants that returned by novel routes to give longer estimates overall, familiarity with the route did not explain the return-trip effect.

As in the previous experiment, participants indicated whether or not the initial-trip took longer than they had expected on the scale from -5 (a lot shorter than expected) to +5 (a lot longer than expected). Participants thought the initial-trip took longer than expected, $M = 1.46$, SD $= 1.64$, which differed from 0, $t(89) = 8.19$, $p < .001$, $d = 0.89$. More importantly, this violation of expectations again predicted the return-trip effect: the more participants thought the initial-trip took longer than expected, the shorter they felt the return-trip took compared to the initial-trip (as measured by the difference in minutes of the estimated duration of the initial and the return-trip), $\beta = -.33$, $t(80) = 3.12$, $p = .003$.

*Study 3*

In a final study, the return-trip effect was tested in a more controlled setting. To do so, participants watched a video of someone travelling by bike from her home to a friend's house and back again at a later time. We made the video so that the initial and return-trip were of the exact same length, both in time and distance travelled. Therefore, for example different speeds of travel could not influence the time estimates (as found by Cohen & Cooper, 1962; Cohen, Hansel, & Sylvester, 1953). To further test the hypothesis that the return-trip is caused by a violation of initial expectations, after which the return-trip feels less bad in comparison, a condition was added where the initial expectations were manipulated. If, as indicated by participants in the previous studies, a feeling that the initial trip took much longer than expected contributes to the return-trip effect, making participants expect an overly long initial trip should lessen or eliminate the return-trip effect. Finally, order of estimates was manipulated to make sure that when the estimates were given could not account for the return-trip effect.

*Method*

Hundred thirty-nine participants (94 females, $M_{age} = 21$ years) took part in a series of studies of which ours was part. The basic set-up was that participants were seated behind a computer and told that they would see a video of a student who travelled by bike from her house to that of a friend. The video was shot from the viewpoint of the person riding the bike (the rider could not be seen). The bike ride took exactly seven minutes, in which a distance of 2.25 km was travelled. After seeing this video other studies followed for about ten minutes. Next, they again watched a video of the student riding a bike, but now described as returning from her friend's house to her home (with the exact same time length). The main dependent variables were again how long participants felt the initial trip and the return trip took. Five conditions were created:

1. Basic return-trip effect; After seeing the return-trip, participants were asked to indicate how long they felt that the return-trip took (on a sliding scale that could range between 1 – 20 minutes). After answering this question, they indicated how long they had felt that the initial trip lasted on the same scale.

2. Question order control; This condition was exactly the same as the Basic Return-Trip Effect condition, only order of the estimates was varied.  Participants first indicated how long the initial trip had felt and then how long the return-trip felt.

3. Question timing control; This procedure was the same as that of the Basic Return-Trip Effect condition, but participants indicated how long the initial trip felt directly after viewing the initial trip. After they saw the return-trip they indicated how long they felt the return-trip took.

4. Different return-trip; The procedure was exactly the same as that of the Basic Return-Trip effect, but the video of the return-trip showed a different (but equally long) route on the return-trip.

5. Expectancy manipulation before initial trip; The procedure was exactly the same as that of the Basic Return-Trip effect, but before they saw the initial trip they were told that they would first read what a previous participant had written about his experience after watching the video. They were presented with a hand-written statement, which was scanned in and presented on the screen. It first read the instruction to that other participant: "Please write down what your experience was (what you thought or felt) when you watched the video of the student riding her bike". It was answered with: "phewwww, that video took a lot longer than I expected".

*Results*

We conducted a mixed-model Type III ANOVA with time estimates of the initial and return trip as within subject variables, and the five conditions described above as the between-

subjects variable. Across conditions, a clear return-trip effect existed. Participants felt that the initial trip took a lot longer ($M = 9.12$ minutes, SD = 3.54) than the return-trip did ($M = 7.35$, SD = 2.59; $F(1, 134) = 70.35$, $p < .001$, $\eta_p^2 = .34$) even though both took exactly 7 minutes. An interaction effect indicates that differences existed between conditions, $F(4, 134) = 2.97$, $p = .022$, $\eta_p^2 = .08$ (see Table 1 for full results).  In the three basic control conditions (where only the question order or timing was manipulated) a significant return-trip effect existed. Note that an analysis on the difference between the estimates of the initial and the return trip shows that asking a time estimate of the initial trip directly after seeing that trip reduces the return-trip effect compared to the Basic Return-Trip Effect condition ($p = .061$) and the Question Order Control condition ($p = .042$). These latter conditions do not differ ($p = .972$). This demonstrates that the order in which questions about the time estimates of the initial or return trip are asked does not eliminate the return-trip effect, although asking for a time estimate directly after the initial trip does seem to reduce it somewhat.

A conservative way of testing the return-trip effect is to compare the time estimates of participants who estimated the duration of the initial trip directly after seeing it (in the Question Timing Control condition, $M = 9.21$ minutes, SD = 3.99) to the participants who made an estimate of the return-trip directly after seeing the return-trip (in the Basic Return-Trip Effect condition, $M = 7.14$ minutes, SD = 2.21). This between subjects analysis also strongly confirms the existence of the return-trip effect, $t(54) = 2.40$, $p = .020$, $d = 0.64$. This shows that the return-trip effect is not only a within-subjects phenomenon, and it rules out that the pattern exist because people might have a lay-theory regarding a return-trip that they wish to confirm.

Given that there was a return-trip effect and question order did not appear to matter, we next examined the effect of familiarity with the return-trip.  One group of participants watched the rider travel back via a different (but equally long) route while the remaining

participants saw the rider return by the same initial route. As with the previous study, the

return-trip effect remained when participants returned by a different route: the Different

Return-Trip group did not differ from the Basic Control, $p = .667$, the Question Order

Control, $p = .554$, or the Question Timing Control, $p = .147$. Being familiar with the return-

trip is not necessary for the return-trip to occur, nor does it seem to influence the strength of

the effect.

Recall that in the previous two studies, the more that participants felt that the initial

trip took longer than expected, the stronger they experienced the return-trip effect. Therefore,

in the Expectancy Manipulation condition, participants were led to believe that the initial trip

would take a long time so that there would not be a violation of expectations. If the return-trip

effect is due to a violation of initial expectations for a short trip, then lengthening participants'

expectations for the initial trip should lessen or eliminate the return trip-effect. Indeed, in this

condition no return-trip effect existed as the estimates of how long the initial and return-trip

felt did not differ (see Table 1). Ironically, when a manipulation made participants expect a

longer initial trip, they actually experienced the trip as taking less time compared to

participants in the other conditions, as indicated by a planned contrast $t(134) = 1.76$, $p = .08$, $d$

$= 0.31$. This is further support for the idea that one of the causes of the return-trip effect is that

people are generally disappointed in the initial trip, after which the return-trip seems relatively

short again.

*Conclusion*

These studies demonstrate that there is a return-trip effect; a pretest shows that people

regularly experience the return-trip as being shorter than the initial-trip and the effect was

found on a bus trip (Study 1), a bicycle trip (Study 2), and while watching a video of someone

else travelling by bike (Study 3). The return-trip effect is quite large: In Study 2 the return trip

was felt to be 17% shorter in duration than the initial trip, in Study 3 it was felt to be 22% shorter (across the four conditions in which an effect was predicted).

The results indicate that the return-trip effect is not due to an increase in familiarity, as the return-trip effect also exists when people travel a different, but equally long trip back. Instead, the return-trip effect is likely due to a violation of expectations. Participants felt that the initial-trip took longer than they had expected. In response, they likely lengthened their expectations for the return-trip. In comparison to this longer expected duration, the return-trip felt short. The greater the participants' expectations were violated on the initial-trip, the more they experienced the return-trip effect (Studies 1 and 2). In Study 3, where participants' expectations for the duration of the initial trip were increased via a manipulation the return-trip effect disappeared.

It is possible that other causes exist for the return-trip effect and that it is a multi-determined phenomenon. The main goal of the current paper was to test whether a return-trip exists, and test two possible explanations. It provides a starting point for subsequent research that examines the role of other aspects, such as motivation, valence of the trip and destination, and the effect of learning on the return-trip effect, what strengthens it, and what the boundary conditions are.

Finding that a violation of expectations (at least partly) causes the return-trip effect does allow us to make new predictions related to the return-trip effect. One of our personal observations on the return-trip effect is that it does not seem to occur for routes travelled frequently, like commuting to work. It is likely that for these routes the expectations become more accurate with repeated feedback (Roy, Mitten & Christenfeld, 2008), which attenuates the return-trip effect.

More generally, the findings on the return-trip effect could also help to predict people's time estimates on other repeated tasks. For example, we predict that people who

watch a movie for a second time are likely to perceive the second viewing as taking less time (especially if the first viewing had seemed overly long). Indeed, one of the authors noted a similar effect when reading a story to his children the second time. These findings on the return-trip effect can thus help to make new predictions on how people experience the duration of tasks unrelated to travelling as well.

Table 1. Return-Trip Effect per Condition in Study 3

| | Initial Trip (minutes) | | Return Trip (minutes) | | Return-trip Effect | | |
|---|---|---|---|---|---|---|---|
| | $M$ | (SD) | $M$ | (SD) | $paired\text{-}t(28)$ | $p$ | $r^2$ |
| Basic Return-Trip Effect | 9.54 | (2.93) | 7.14 | (2.21) | 5.01 | < .001 | .47 |
| Question Order Control | 9.36 | (4.02) | 6.86 | (2.24) | 5.52 | < .001 | .52 |
| Question Timing Control | 9.21 | (3.99) | 8.07 | (3.13) | 2.50 | .019 | .18 |
| Different Return-Trip | 9.39 | (3.68) | 7.29 | (2.58) | 4.54 | < .001 | .42 |
| Expectancy Manipulation before Initial Trip | 8.04 | (2.94) | 7.37 | (2.72) | 1.34 | .192 | .06 |

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