

RESEARCH ARTICLE

WILEY

Creating a false alibi leads to errors of commission and omission

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Funding information

Fonds Wetenschappelijk Onderzoek, Grant/Award Number: g0d3621n; Onderzoeksraad, KU Leuven, Grant/Award Number: zkd5384

Abstract

A suspect of a crime can avoid legal repercussions by creating a false alibi. We examined whether creating such a false alibi can have adverse effects on memory. To do so, participants watched a mock crime video and were either instructed to create a false alibi or to provide an honest account for what they actually saw in the video. After a 2-day and 1-month delay, all participants were instructed to come forward with the truth using a free recall task. Participants who initially created a false alibi had more commission errors after a 2-day and 1-month delay (vs. truth telling participants). Moreover, participants who created a false alibi reported fewer correct details after a 2-day and 1-month delay (vs. truth telling participants). Our study suggests that like other types of deception, creating a false alibi can elicit memory undermining effects in the form of commission and omission errors.

KEYWORDS

deception, false alibi, memory

1 | CREATING A FALSE ALIBI LEADS TO ERRORS OF COMMISSION AND OMISSION

There are several ways suspects of serious crimes might lie during investigative interviews. For example, suspects might pretend to have memory loss to evade criminal responsibility or interfere with the trial proceedings (e.g., Jellic, 2018; Mangiulli et al., 2018; Tysse & Hafemeister, 2006). Another deceptive strategy to forestall legal consequences for a suspect of a crime is by creating a false alibi. That is, some suspects may claim to be at a different location at the time of the offense that excludes him/her as the possible suspect (Laliberte et al., 2021). Interestingly, previous research has demonstrated that lying can exert memory undermining effects (for an overview, see Otgaar & Baker, 2018) such as failing to remember experienced or discussed details (i.e., forgetting; Fawcett & Hulbert, 2020; Goodman et al., 2003) or misremembering details that were not actually experienced (i.e., false memories; Brainerd & Reyna, 2019). However, to

date, empirical research is lacking on whether creating a false alibi may also lead to such memory contaminating effects. This was the impetus of the present experiment.

1.1 | Lying and memory

Research on memory and deception has focused on various types of lies (i.e., false denials, feigning amnesia, and fabrication) and how they might affect memory performance. The Memory and Deception framework (MAD; Otgaar & Baker, 2018) postulates that different types of deceptive strategies exert different mnemonic effects such as errors of omission (e.g., forgetting) and commission (e.g., false memories). According to the MAD framework, false denials and feigning amnesia tend to undermine memory in terms of omission errors (e.g., Otgaar et al., 2014; Mangiulli et al., 2018; Van Oorsouw & Merckelbach, 2004; but see also Mangiulli, van Oorsouw, et al., 2019),

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whereas fabrication elicits errors of commission (e.g., Ackil & Zaragoza, 1998). The creation of a false alibi aligns mostly with fabrication, thereby referring to the creation of an alternative detail (e.g., fabricating that there was a gun at the scene of an unarmed robbery) or version of what truly happened (e.g., fabricating having played poker with friends at home at the time of the crime). As with fabrication, creating a false alibi might be based on prior experience (e.g., where the suspect was the day before at that time), what the suspect normally does (e.g., “Wednesday nights I usually play football”), or is completely made up (see Riesthuis et al., 2020). However, creating a false alibi focuses specifically on the suspect's perspective and the whereabouts at the time of the crime.

A well-known method to examine the effects of fabrication on memory is the forced fabrication paradigm (Ackil & Zaragoza, 1998). In the first study using this paradigm, participants watched a video of a boy's experience on a summer camp with three critical events: Birthday party where a camp counselor fell, boat trip with a sudden appearance of a snake, and a small fight among campers. Subsequently, participants were asked questions during an interview about details that were presented in the video (e.g., “What was it that scared the people on the boat?”; answerable questions) and details that were not present (e.g., “Where was the camp counselor bleeding?”; unanswerable questions). Some participants were asked to answer all questions and guess when uncertain. Thus, these participants fabricated a response when answering an unanswerable question. The other participants received the same questions but were instructed to only answer the questions when they were certain and avoid guessing. After a delay, participants who were instructed to answer unanswerable questions misremembered their fabrications as details they had witnessed in the video (e.g., the camp counselor's knee was bleeding; Ackil & Zaragoza, 1998, 2011). Furthermore, forced fabrications did not seem to impair the memory for the details that were truly experienced.

In addition to research showing that forced fabrications yield memory contaminating effects, van Oorsouw and Giesbrecht (2008) examined whether such ramifications on memory also occurred when participants fabricated an entire account to minimize their culpability for a mock crime. Specifically, the authors instructed participants to perform a mock crime [i.e., robbing a (fake staged) bar]. Then, participants were instructed to either minimize culpability or confess to the mock crime. Participants in the former group could freely choose their deceptive strategy to minimize their culpability. Interestingly, all participants fabricated an alternative story of the mock crime to do so. One week later, both groups were asked to provide a truthful account for the mock crime. Participants in the minimize culpability group produced more commission errors (e.g., “there was a television near the bar”; van Oorsouw & Giesbrecht, 2008) than the confessors. However, as seen in forced confabulation studies (Ackil & Zaragoza, 1998), fabrication did not impair memory for the experienced event (van Oorsouw & Giesbrecht, 2008).

Taken together, previous studies have shown that fabrication can lead to commission errors (Ackil & Zaragoza, 1998; van Oorsouw & Giesbrecht, 2008). The increase in commission errors can be explained by relying on the tenets of the Source Monitoring Framework (SMF; Johnson et al., 1993). According to the SMF, true memories contain

more affective, contextual, and perceptual characteristics than imagined memories (e.g., false memories) which are assumed to contain more cognitive operations (e.g., reasoning or thinking). When a memory is retrieved, an attribution is made about whether the memory is true or imagined based on its memory characteristics. If imagined memories contain many affective, contextual, and/or perceptual characteristics, the mental representation can be misattributed as originating from an experienced event leading to a source monitoring error. This reasoning could equally well be applied to the effects of creating a false alibi on memory. That is, if a false alibi contains many affective, contextual, and perceptual characteristics such as when the false alibi is based on prior experiences or what they normally do, this might lead individuals to confuse the two sources, thus resulting in commission errors (Johnson et al., 1993).

2 | THE PRESENT EXPERIMENT

The main aim of the present experiment was to examine whether creating a false alibi would lead to commission errors. To examine this, participants watched a mock crime video and were either instructed to create a false alibi or to tell the truth (i.e., control group) about what they witnessed in the video. After a 2-day and 1-month delay, all participants were instructed to come forward with the truth via a free recall memory task. Based on previous studies (Ackil & Zaragoza, 1998; van Oorsouw & Giesbrecht, 2008), we expected that participants who initially created a false alibi would elicit more commission errors when eventually providing an honest account as compared with participants who told the truth from the beginning. Moreover, we predicted that after a 1-month delay, participants in the false alibi group would have more commission errors (vs. the truth-telling group) as the passage of time can hinder the ability to accurately monitor the sources of the true and fabricated events (Johnson et al., 1993). Additionally, as seen in previous research (Ackil & Zaragoza, 1998; van Oorsouw & Giesbrecht, 2008), we did not expect to find a statistically significant difference between the two groups (false alibi vs. truth-telling) in terms of correct details of the memory.

3 | METHOD

3.1 | Participants

An a priori power analysis via G*Power (Faul et al., 2009) indicated that a minimum sample size of 102 participants was needed to perform a one-tailed independent sample t-test and be able to detect a Cohen's $d = .50$ with a power = .80 and $\alpha = .05$.¹ The effect size was based on a previous study wherein a Cohen's $d = .60$ was detected for the difference in commission errors between participants that minimized their culpability and those who told the truth (i.e., confessors; van Oorsouw & Giesbrecht, 2008). However, we decided to use a more cautious effect size for the power analysis (Cohen's $d = 0.50$). A total of 169 participants initially took part in Session 1 of the experiment, but only 125 participants completed the session.

Of those 125 participants, 29 did not return for Session 2. Therefore, we used 96 participants for the final statistical analyses ($M_{\text{age}} = 21.9$, $SD_{\text{age}} = 3.2$, range = 20–51; 81 women). A sensitivity analysis conducted in G*Power (Faul et al., 2009) for a one-tailed independent sample *t*-test with 44 participants in the false alibi group and 52 participants in the truth-telling group, a power = .80 and $\alpha = .05$, revealed that we could detect an effect size of Cohen's $d = .51$. For the final session, which took place after a 1-month delay, a total of 64 participants participated (false alibi $n = 30$ and truth-telling $n = 34$). This latter part of the study was conducted for exploratory purposes due to anticipated lower response rate and thus lower statistical power after a 1-month delay. The sensitivity analysis for Session 3 showed that we could detect an effect size of Cohen's $d = .62$, for a one-tailed independent sample *t*-test with 30 participants in the false alibi group and 34 participants in the truth-telling group, a power = .80 and $\alpha = .05$. Participants were students from the Faculty of Law and Criminology at KU Leuven and were recruited using online advertisements. Participation in the study was voluntary. The Social and Societal Ethics Committee of KU Leuven approved the experiment (reference number: G-2020-2630). Moreover, we preregistered the study on the Open Science Framework (OSF; https://osf.io/8rqen/?view_only=f6b9748e510c497ea7c49b1dc088c190), where we also uploaded the raw data https://osf.io/25zt9/?view_only=fc5e89889e8b4c2e8742a39ef6f88398.

3.2 | Materials

3.2.1 | Mock crime video

We used a 3-min mock crime video recorded in point of view shot (i.e., video from the angle of what the offender perceives) successfully adopted in previous studies (e.g., Mangiulli et al., 2020; Mangiulli, van Oorsouw, et al., 2019). The video depicts the main character's (i.e., the offender) day, wherein he/she wakes up, goes to work and experiences some hardships (e.g., angry boss), comes home, and makes dinner. Then, the offender decides to start drinking in several bars and gets into small altercations (e.g., pushing, verbal disagreements). One of the altercations is with a man in the street who the offender bumps into, pushes and argues with (i.e., critical event). At the end, an altercation in a toilet leads to a fight and ends up with the offender strangling the victim to death. Participants were only able to see the hands of the offender, which belonged to a 25-year-old white person.

3.3 | Design and procedure

We used a between-subject design (Group: false alibi vs. truth-telling). Participants were randomly assigned to either the false alibi group ($n = 44$) or the truth-telling group ($n = 52$). Our dependent variables of interest were the number of correct details (i.e., went to work with his green car) and commission errors (i.e., went to work by foot) reported in the free recall memory tasks.

The experiment was conducted online through Qualtrics. In the first session, participants received a link to access the experiment. Participants were informed that they were going to watch a 3-min video of a mock crime and were instructed to identify themselves with the protagonist (see Supplementary Materials for all instructions). Participants could only continue to the next part of the experiment after having watched the video completely. Afterwards, they engaged in a distractor task (i.e., 5 min playing Tetris).

Then, participants were divided into two groups: false alibi and truth-telling. All participants were told that they were held as a suspect for the crime because of an anonymous tip. The anonymous tip was from a man stating that the offender got into a small altercation with him in the street (critical event) and who stated to have seen the offender walking toward the location of the crime. Participants in the false alibi group were instructed to give a detailed report of what happened that day in the video, but to create a false alibi for the events that happened after the critical event to avoid being convicted. That is, if participants in the false alibi group followed the instructions correctly, they should not report everything that happened and leave out incriminating details. By contrast, participants in the truth-telling group were instructed to cooperate and provided a truthful and detailed report of what happened that day in the video. Participants had a maximum of 10 min to write their statement.

After a 2-day delay, participants received a link via email to take part in Session 2. Participants had 24 h to respond. For Session 2, participants in the false alibi group were instructed to come forward with the truth while participants in the truth-telling group were instructed to give once more an honest account of what happened. Participants in both groups were informed that they had a maximum of 10 min to write their statement.

After 1 month, participants received another link via email for Session 3. Participants had 1 week to respond. All participants were instructed to write once more a truthful report of what they did and what happened on the day of the murder. Participants had a maximum of 10 min to write their statement. Upon completion, participants were debriefed and thanked for their participation.

3.4 | Free recall report scoring

The video for the mock crime was divided into 70 critical items as done in previous research (see Mangiulli et al., 2020). A critical item consisted of information that bore relevance to the overall story depicted in the video (e.g., "I puked in the sink"). For every correctly reported critical item, participants received 1 point (range 0–70). We used the sum of all correctly reported critical items for the statistical analyses. Moreover, we assigned 1 point for every commission error of the participant (e.g., "I washed the blood off my hands"). Commission errors were assigned when participants misremembered an entire new detail or event. For example, a commission error was assigned when participants reported that the protagonist went to the bar by bus while the protagonist drove a green car. The sum of all commission errors was used for the statistical analyses. The participants' free

recall reports were scored by the first author and a research assistant. The first author was blind to group assignment during coding. The research assistant was blind to the study's hypotheses, design, and groups. The first author coded all data while the research assistant coded 51% of the data. Disagreements were discussed and resolved between the first author and the research assistant wherein the latter had the final say to minimize the potential bias of the first author. The intraclass correlation coefficients were calculated based on a single rating, absolute agreement, and two-way random-effects model for reported correct details ($ICC[2,1] = .94, p < .001$) and commission errors ($ICC[2,1] = .96, p < .001$).

4 | RESULTS

4.1 | Statistical analyses

We first checked whether our data were normally distributed via visual inspection of QQ plots, histograms, and the Shapiro-Wilk's test. When our data were normally distributed, we conducted Welch's independent sample *t*-tests between the two groups for the dependent variable. If the data were not normally distributed, we used the Mann-Whitney *U* tests.² For all analyses, we first gave the standard statistical reporting for either the parametric or nonparametric tests (e.g., *t* statistic, *p* values, Hedges' *g*, etc.). Then, in line with best practice recommendations (Funder & Ozer, 2019; Riesthuis et al., 2022), we explained the results in unstandardized effect sizes (i.e., raw mean differences) to give an intuitive understanding of the magnitude of the effects of creating a false alibi on memory. We performed a manipulation check (Session 1) to assess whether participants in the false alibi group successfully adhered with the instructions. That is, if participants in the false alibi group followed the instructions, they would have lower number of correct details reported in comparison with participants in the truth-telling group in Session 1. Additionally, they would have more commission errors (vs. truth-telling group). Last, we conducted statistical analyses to examine the effects of false alibi creation on memory at Session 2 (2-day delay) and Session 3 (1-month delay).

4.2 | Manipulation check: Session 1

As expected, a Mann-Whitney *U* test showed that the participants in the truth-telling group reported statistically significantly more correct details ($Mdn = 24.0$) than participants in the false alibi group ($Mdn = 7.0$), $W = 2169.5, p < .001, r_{pb} = .90, BF_{10} > 100$. So, participants who gave an honest account reported, on average, 15.11 more correct details than participants who created a false alibi. Additionally, a Mann-Whitney *U* test revealed that participants who created a false alibi reported statistically significantly more commission errors ($Mdn = 3.0$) as compared with participants in the truth-telling group ($Mdn = 0.0$), $W = 104.0, p < .001, r_{pb} = -.91, BF_{10} > 100$. More specifically, participants who created a false alibi reported, on average, 2.8 more commission errors than

TABLE 1 Descriptive statistics of reported correct details and commission errors

Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	Proportion
<i>Session 1: Manipulation check</i>					
Correct details					
Truth telling	52	23.02	7.10	24.00	.33
False alibi	44	7.91	4.91	7.00	.07
Commission errors					
Truth telling	52	.31	.61	0.00	N/A
False alibi	44	3.11	1.96	3.00	N/A
<i>Session 2: 2-day delay</i>					
Correct details					
Truth telling	52	24.23	6.71	25.00	.35
False alibi	44	19.05	6.27	18.00	.27
Commission errors					
Truth telling	52	.23	.61	0.00	N/A
False alibi	44	.82	1.15	1.00	N/A
<i>Session 3: 1-month delay</i>					
Correct details					
Truth telling	34	21.68	6.74	21.50	.31
False alibi	30	17.00	6.39	16.50	.24
Commission errors					
Truth telling	34	.56	.89	0.00	N/A
False alibi	30	1.07	1.23	1.00	N/A

Note: *n* = number of participants per group, *M* = mean, *SD* = Standard Deviation, *Mdn* = Median. N/A stands for not applicable. Proportion scores could not be calculated for commission errors because there was not maximum number of commission errors. Proportion scores for correct details were calculated by dividing the sum of the number of correct details reported by the participant by the maximum number of correct details (=70).

participants who told the truth. This means that our manipulation succeeded because participants who were instructed to create a false alibi were expected to report fewer correct details and more commission errors. The type of false alibis was different for each participant but ranged from creating completely fabricated events such as "staying over at the place of a Tinder date" to simply stating "they felt sick and decided to go home" instead of going to the bars.

4.3 | Correct details reported

A Welch's independent sample *t*-test found that participants who told the truth reported statistically significant more correct details ($M = 24.23, SD = 6.71$) than participants who created a false alibi ($M = 19.05, SD = 6.27$) after the 2-day delay (Session 2), $t(94) = 3.91, p < .001$, Hedges' *g* = .79, $BF_{10} > 100$. That is, participants in the truth-telling group reported, on average, 5.18 more correct details than participants in the false alibi group when coming forward with the truth after 2 days (see Table 1). After a 1-month

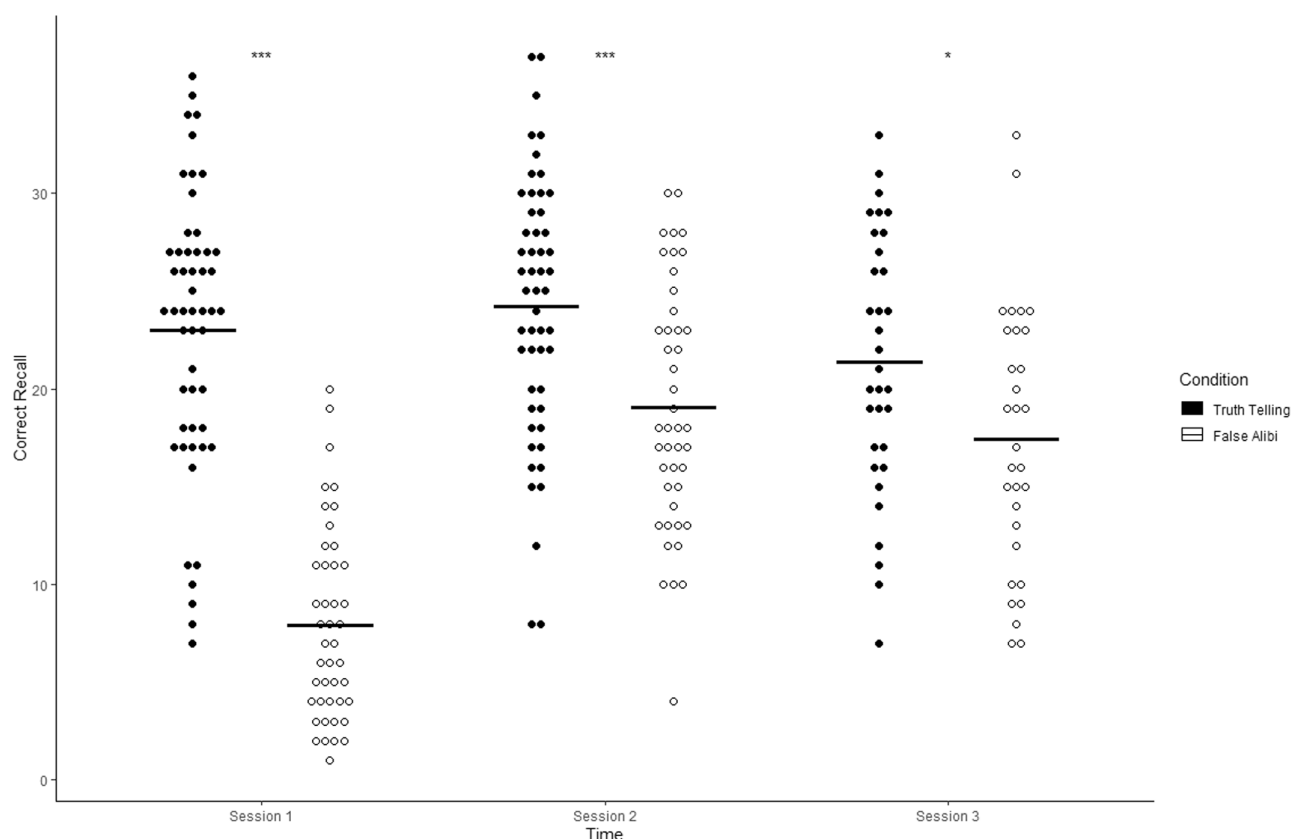


FIGURE 1 Dot plot for correct details reported between false alibi group and truth-telling group for each of the three sessions. Session 1 was the initial free recall memory task. Session 2 was after a 2-day delay and Session 3 was after a 1-month delay. * $p < .05$, *** $p < .001$

delay (Session 3), we found that participants in the truth-telling group reported statistically significant more correct details ($M = 21.68$, $SD = 6.39$) than participants in the false alibi group ($M = 17.00$, $SD = 6.74$), $t(62) = 2.85$, $p = .003$, Hedges' $g = .70$, $BF_{10} = 13.76$ (see Figure 1). Put differently, this means that participants in the truth-telling group reported, on average, 4.68 more correct details compared with participants in the false alibi group after a 1-month delay.

4.4 | Commission errors

A Mann–Whitney U test for commission errors after the 2-day delay (Session 2) showed that participants in the false alibi group reported statistically significantly more commission errors ($Mdn = 1.0$) than participants in the truth-telling group ($Mdn = 0.0$), $W = 707.0$, $p < .001$, $r_{pb} = -.38$, $BF_{10} = 11.47$. That is, participants in the false alibi group reported, on average, .59 more commission errors than participants in the truth-telling group when coming forward with the truth after a 2-day delay. Statistical analyses for commission errors after a 1-month delay (Session 3) also demonstrated that participants who created a false alibi reported statistically significant more commission errors ($Mdn = 1.0$) compared with participants who told the truth ($Mdn = 0.0$), $W = 393.5$, $p < .041$, $r_{pb} = -.23$, $BF_{10} = 1.18$ (see Figure 2). In other words, after a 1-month delay, participants in the false alibi group reported, on average, .51 more commission errors than participants in the truth-telling group.

4.5 | Reporting of fabrications in memory

We also examined whether participants who created a false alibi reported the same fabricated details across sessions. That is, we assessed how many participants reported at least 1 detail (i.e., commission) of the initial false alibi when coming forward with the truth during Session 2 and/or 3. Overall, 25% ($n = 11/44$) of participants that initially created a false alibi eventually reported at least one fabricated detail in their genuine memory statements (i.e., during Session 2 and/or 3). More specifically, 9.1% ($n = 4/44$) of participants reported the exact fabricated details from the first session throughout Session 2 and Session 3; 6.8% ($n = 3/44$) only at Session 2; and finally, 9.1% ($n = 4/44$) only at Session 3.

4.6 | Exploratory analyses

4.6.1 | Length of alibis (session 1) and memory reports (sessions 2 and 3)

For exploratory purposes, we examined the length of the alibis in terms of the number of words they used. A Welch independent sample t -test found that the alibis of participants in the truth telling group had statistically significantly more words ($M = 226.3$, $SD = 75.1$) than the alibis of participants in the false alibi group ($M = 153.3$, $SD = 74.6$), $t(94) = 4.72$, $p < .001$, Hedges' $g = .96$, $BF_{10} > 100$.

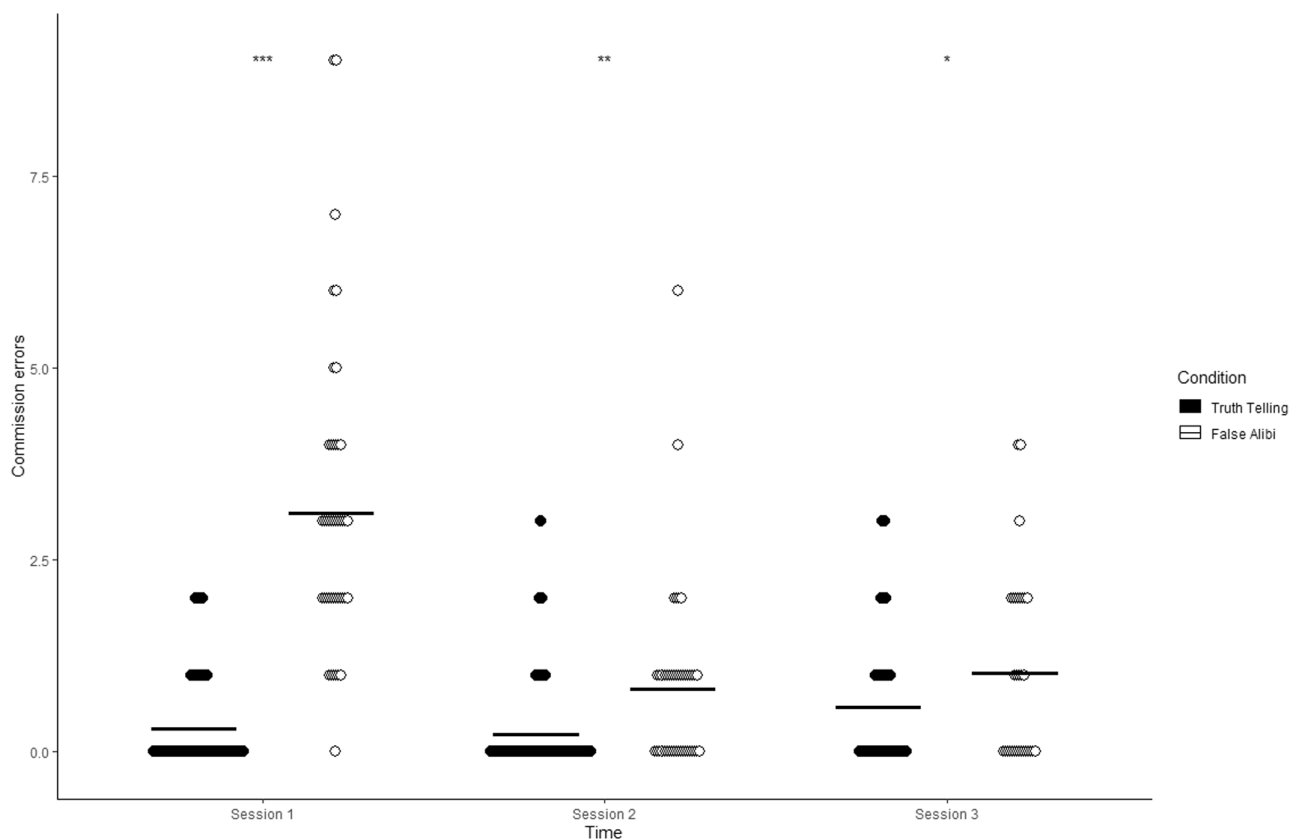


FIGURE 2 Dot plot for commission errors between false alibi group and truth-telling group for each of the three sessions * $p < .05$, ** $p < .01$, *** $p < .001$. Session 1 was the initial free recall memory task. Session 2 was after a 2-day delay and session 3 was after a 1-month delay

In other words, participants in the truth-telling group reported on average 73 words more than participants in the false alibi group during Session 1. However, we did not find evidence for a statistically significant difference for the length of the memory report regarding what truly happened after a 2-day delay (Session 2) between the false alibi ($M = 213.5$, $SD = 76.8$) and the truth-telling groups ($M = 238.8$, $SD = 79.9$), $t(94) = 1.57$, $p = .12$, Hedges' $g = .32$, $BF_{10} = 1.15$. Moreover, we did not find a statistically significant difference in the length of the memory report about what truly occurred after a 1-month delay between the false alibi ($M = 180.4$, $SD = 74.9$) and the truth-telling groups ($M = 214.7$, $SD = 78.8$), $t(62) = 1.79$, $p = .079$, Hedges' $g = .44$, $BF_{10} = 2.64$.

4.6.2 | Memory performance before and after critical event

The participants were informed that the police had received a tip from a man with whom the offender had an altercation with in the streets. The tip stated that the man had seen the offender on their way to the bar where the crime occurred. Although participants in the false alibi group could freely choose how they would create a false alibi, they had to keep in mind that the police were aware of the anonymous tip, and take this into account for their report. Hence, we conducted exploratory

statistical analyses to examine participants' correct details before and after this critical event (i.e., altercation with the man in the streets).

As part of the manipulation check, a Mann-Whitney U test showed that participants who told the truth reported more correct details before the critical event ($Mdn = 14.0$) than participants who created a false alibi ($Mdn = 6.5$) during Session 1, $W = 1827.5$, $p < .001$, $r_{pb} = .60$, $BF_{10} > 100$. In other words, participants in the truth-telling group reported, on average, 7.40 more correct details before the critical event than participants in the false alibi group. Moreover, truth tellers reported statistically significantly more correct details after the critical event ($Mdn = 10.5$) than participants who created a false alibi ($Mdn = 0.00$) at Session 1, $W = 2276.0$, $p < .001$, $r_{pb} = .99$, $BF_{10} > 100$. More specifically, participants that told the truth reported, on average, 9.33 more correct details after the critical event than participants that created a false alibi. These results suggest that participants in the false alibi group correctly followed the instructions. That is, they were instructed to create a false alibi while keeping in mind the anonymous tip (i.e., critical event) leading to lower reporting of correct details after the critical event.

After a 2-day delay (Session 2), participants in the truth-telling group still reported statistically significantly more correct details before the critical event ($M = 13.64$, $SD = 4.41$) than the participants in the false alibi group ($M = 11.14$, $SD = 4.68$), $t(94) = 2.67$, $p = .004$, Hedges' $g' = .55$, $BF_{10} = 9.79$. In other words, after a 2-day

delay, participants who initially told the truth reported 2.50 more correct details before the critical event compared with participants who created a false alibi. Also, participants in the truth-telling group reported more correct details after the critical event ($M = 10.60$, $SD = 3.31$) compared with participants who created a false alibi ($M = 7.91$, $SD = 3.08$), $t(94) = 4.12$, $p < .001$, Hedges $g' = .83$, $BF_{10} < 100$. More specifically, participants in the truth-telling group reported, on average, 2.67 more correct details after the critical event than participants in the false alibi group. Even after a month (Session 3), participants that initially told the truth reported statistically significantly more correct details before the critical event ($M = 12.32$, $SD = 4.50$) than participants who created a false alibi ($M = 10.17$, $SD = 4.31$), $t(62) = 1.96$, $p = .027$, Hedges $g' = .48$, $BF_{10} = 2.42$. Specifically, participants in the truth telling group reported, on average, 2.15 more correct details before the critical event (vs. false alibi group). Moreover, participants in the truth-telling group reported more correct details after the critical event ($M = 9.34$, $SD = 3.57$) compared with participants in the false alibi group ($M = 6.83$, $SD = 3.37$), $t(62) = 2.90$, $p = .003$, Hedges $g' = .72$, $BF_{10} = 15.53$. That is, participants who initially told the truth reported, on average, 2.51 more correct details after the critical event than participants who created a false alibi.

We also explored whether the number of correct details was affected differently for details before and after the critical event at each Session for participants in the false alibi group. There were 40 critical items before the critical event and 30 critical items after. Scores were transformed into proportions for the statistical analyses to have a fair comparison for the items before and after the critical event. A one-tailed student paired sample t test for correct details at Session 1 showed that statistically significantly more details were reported before the critical event ($M = .19$, $SD = .12$) than after ($M = .02$, $SD = 0.03$), $t(43) = 9.10$, $p < .001$, Cohen's $d = 1.37$, $BF_{10} > 100$. In other words, participants who created a false alibi reported, on average, 7.00 more correct details for events that happened before the critical event compared with event that happened afterwards. This indicates that participants understood the instructions to create a false alibi after the critical event and still reported what truly occurred before the critical event. However, we did not find a statistically significant difference after a 2-day delay (Session 2) between correct details reported before the critical event ($M = .28$, $SD = .12$) and after ($M = .26$, $SD = .10$), $t(43) = .74$, $p = .23$, Cohen's $d = .11$, $BF_{10} = .32$. We also failed to find evidence for a statistically significant difference after an 1-month delay (Session 3) between correct details reported before the critical event ($M = .25$, $SD = .11$) and after ($M = .23$, $SD = .11$), $t(29) = 1.17$, $p = .13$, Cohen's $d = .21$, $BF_{10} = .63$.

5 | DISCUSSION

In the present study, we examined whether creating a false alibi would lead to commission errors. To do so, participants watched a mock crime video in point of view perspective and then some participants

were instructed to create a false alibi to avoid responsibility for the mock crime while others told the truth. After a 2-day and 1-month delay, all participants were instructed to come forward with the truth on a free recall memory task.

Previous research has shown that fabrication can lead to commission errors (Ackil & Zaragoza, 1998; van Oorsouw & Giesbrecht, 2008). In line with our prediction based on the memory contaminating effects of fabrication, participants who created a false alibi reported more commission errors relative to participants who told the truth. Like previous studies on fabrication (i.e., Ackil & Zaragoza, 1998; Chrobak & Zaragoza, 2008), we found evidence for such an increase in commission errors caused by false alibi creation after short (i.e., 2 days) and longer delays (i.e., 1 month). This suggests that fabrication and creating a false alibi may have similar lasting detrimental effects on memory. However, caution should be exercised when examining the results of our *long-term* effects of fabrication on commission errors because the Bayes Factor only indicated anecdotal evidence in favor of the alternative hypothesis, suggesting possible insensitivity due to the lower response rate at Session 3 (Dienes, 2014).

In addition, we examined whether participants in the false alibi group would report details of their false alibi into their memory statements for what truly happened. According to the SMF (Johnson et al., 1993), the observed increase in commission errors should stem from the false testimony being rich in affective, contextual, and perceptual characteristics leading to inaccurately judging the source of details or entire parts of the false alibi as a true memory. Such monitoring failures might have occurred for a subset of participants (25%) who created a false alibi and reported their fabrications in their truthful accounts at Sessions 2 and/or 3. In general, it is possible that the creation of a false alibi served as a distractor or disruptor of establishing clear source cues of true and fabricated events (Johnson et al., 1993; Reyna & Lloyd, 1997). So, creating a false alibi might have decreased the source monitoring abilities leading to more intrusion errors as compared with truth tellers (i.e., commission errors unrelated to the false alibi).

Interestingly, in contrast to our prediction and previous research (Ackil & Zaragoza, 1998, 2011; van Oorsouw & Giesbrecht, 2008), participants in the false alibi group reported fewer correct details than participants in the truth-telling group. One possible explanation for this finding is that the lower memory performance in the false alibi group was due to retrieval-induced forgetting (RIF; Anderson et al., 2000). RIF refers to the finding that retrieving related items about an experienced event leads to forgetting of other associated information. Following this line of reasoning, participants who created a false alibi remembered the mock crime less correctly because they fabricated related information. In our experiment, participants were informed that the police had received a tip from the man with whom the protagonist got into an altercation with in the street (critical event). This suggests that the RIF effect should have impaired the memory for details after—but not before—the altercation with the man as participants were instructed to create a false alibi that justified their whereabouts after this critical event. However, our exploratory analyses failed to find evidence that participants in the false alibi

group reported more correct details before the critical event as compared with *after* the critical event. Hence, RIF might be seen as an unlikely account for impaired memory for correct details after creating a false alibi.

An alternative explanation for why we found that creating a false alibi led to lower correct memory performance has to do with the used stimuli. It is possible that, as compared with merely watching a video, the act of creating a false alibi for a performed mock crime might enhance memory for the experienced event (e.g., van Oorsouw & Giesbrecht, 2008). This is in line with previous research showing that memory is indeed amplified for simple actions when they are performed instead of observed (Mulligan & Hornstein, 2003; but see also Steffens, 2007). Future research could assess whether creating a false alibi for a performed crime also undermines memory in the form of lower correct details for the experienced event.

Another possible explanation for the lower number of correct details following the creation of a false alibi can relate to a lack of rehearsal, which likely took place when participants created a false alibi and did not report on (parts of) the event (Bylin & Christianson, 2002; Christianson & Bylin, 1999; Mangiulli, van Oorsouw, et al., 2019). This explanation was supported by our exploratory analyses, wherein participants in the false alibi group reported fewer correct details before and after the critical event as compared with participants in the truth-telling group at Session 1. Specifically, participants who created a false alibi during Session 1 reported less information both before and after the critical event (vs. truth-telling group). This initial lack of reporting might have led to impaired memory for the event. Our research design restricts us to draw a more definite conclusion regarding the lack of rehearsal as an explanation for our findings. The main reason for this is because we did not include a delayed test-only condition (e.g., Mangiulli et al., 2018; van Oorsouw & Merckelbach, 2004). Hence, future research might include an additional control condition so to more systematically study possible cognitive mechanisms underlying the effect of false alibi on memory for a (mock) crime. However, the primary aim of the present study was to examine whether creating a false alibi would exert an increase in commission errors when coming forward with the truth relative to truth telling. Because previous research (Ackil & Zaragoza, 1998, 2011; van Oorsouw & Giesbrecht, 2008) showed that fabrication does not lead to lower correct recall, we did not include a delayed test-only condition. Even though our analyses regarding the number of correct details reported were exploratory (see preregistration), our results hinge toward the idea that creating a false alibi (as compared with truth telling) might differ from fabrication because it can lead to reporting more errors of commission and fewer correct details.

Moreover, the Constructive Memory Framework (CMF; Schacter & Addis, 2007) could account for the observed omission and commission errors in the present study. The CMF posits that when an experience is recalled we do not literally reproduce it, but rather reconstruct it. In the process of reconstructing an experience, memory errors can enter because information is added through various sources such as other experiences, personal perspectives, and inferences. Our findings revealed that when participants created a false alibi, they made more commission errors but also may have suppressed the truth as they reported fewer

correct details (vs. truth-telling group). Previous research has shown that such suppression of information can lead to forgetting which is what we found as well (Levy & Anderson, 2002). Moreover, our exploratory analyses showed that the lengths of the alibis did not differ after the participants came forward with the truth. Thus, when participants came forward with the truth, they attempted to reconstruct what truly occurred. In doing so, they reported some previously omitted correct details but also added commission errors to create a coherent depiction of the mock crime (Schacter & Addis, 2007).

Although the present study provides the first evidence that creating a false alibi can have adverse effects on what information is recalled in memory-based reports, there are some limitations that need to be addressed. For instance, we used a free recall task to assess the effects of creating a false alibi on memory. Using such type of memory task makes it more difficult to disentangle whether participants' memory was truly affected or whether our manipulations affected people's willingness to report information. By contrast, however, the use of a recognition task in the current experiment would have led to less control on how false alibis may affect memory. That is, because all participants came up with their own false alibi, the fabricated details were different for each participant. Future research could examine the memory effects of creating a false alibi using a more narrowed recognition memory task.

Furthermore, in the current experiment, participants were instructed to create a false alibi via typed/written statements in an online setting after watching a mock crime video, rather than after performing a mock crime. Even though we asked our participants to identify themselves with the perpetrator of the mock crime, this differs from situations wherein following a criminal act, suspects deceive and convince a police officer during an interview. Arguably, these issues might hamper the generalizability of our results. Interestingly, given the COVID-19 pandemic and need for remote work, our study can give preliminary insights into how online police interviews might be affected when people come forward with the truth after having lied initially online. However, future studies might examine the effects of creating a false alibi during an interview on memory performance after participants performed a mock crime.

Another caveat of our results concerns the magnitude of the observed effects. That is, our results indicated that when participants come forward with the truth after initially creating a false alibi, they only report, on average, 0.5 more commission errors than participants who told the truth from the beginning. This effect is rather small and, thus, the real-life implications of creating a false alibi on commission errors should be treated with caution. However, it may be possible that when participants are more actively engaged and have to deceive and convince an interviewer of a false alibi during a face-to-face interview, the effects on commission errors are higher. More specifically, telling lies in such a setting might increase the affective, contextual, and perceptual characteristics of the memory, leading to higher source monitoring errors and thus more commission errors. Future research, therefore, could examine whether different or stronger mnemonic effects take place when participants create a false alibi during a face-to-face interaction with an interviewer.

Taken together, our results demonstrated that creating a false alibi (vs. truth telling) elicits similar memory contaminating effects as seen with fabrication (Ackil & Zaragoza, 1998; van Oorsouw & Giesbrecht, 2008), but also memory undermining effects such as omission errors. In the light of the MAD framework (Otgaar & Baker, 2018), our results suggest that creating a false alibi might be a unique type of deceptive strategy with different mnemonic effects not yet accounted for. However, as seen in studies examining feigning amnesia (e.g., Mangiulli et al., 2020), some participants tend to mix certain deceptive strategies. Specifically, when participants are instructed to feign amnesia, they sometimes not only pretend to have memory loss but also fabricate alternative details which can lead to commission and omission errors (Mangiulli et al., 2020; Mangiulli, van Oorsouw, et al., 2019; van Oorsouw & Merckelbach, 2006). Our results suggest that creating a false alibi might exert similar mnemonic effects as feigning amnesia, and it is possible that this stems from using a combination of deceptive strategies such as fabrication and omitting crucial information. Arguably, future research could examine what the different memory undermining effects are when multiple deceptive strategies are simultaneously adopted.

From a practical perspective, our findings suggest that creating a false alibi can have adverse effects on memory leading to unreliable testimonies. For instance, suspects who initially create a false alibi during investigative interviews and then come forward with the truth might not only make more commission errors but also report fewer correct details relative to suspects that tell the truth from the beginning. This is of interest because previous research has revealed that legal professionals (e.g., lawyers, judges) view inconsistencies between alibis (e.g., suspect stating at an initial interview that he/she was with friends the night of the crime and then stating that he/she was sleeping at their parents' house at a follow up interview) as an important indicator of guilt (Crozier et al., 2017; Fisher et al., 2009; Strange et al., 2014). Moreover, Nieuwkamp et al. (2016) revealed that alibis are more likely to be believed when they change in content between alibis because of an initial lie as compared with when they change due to memory errors. However, a wealth of research has demonstrated that memory errors such as omissions and commissions are part of a normal functioning memory which can account for inconsistencies between testimonies (Fawcett & Hulbert, 2020; Howe & Knott, 2015; Loftus, 2005). Furthermore, our study showed that participants who created a false alibi can also make such memory errors between alibis on top of the inconsistencies seen by initially lying and then coming forward with the truth.

Additionally, our findings can be especially challenging in plea bargain situations, which take place during approximately 95% of all convictions in the United States of America (Reaves, 2013). Although not always exercised, it is recommended in plea bargains to obtain detailed information about the crime from the defendant to add legitimacy to the proceedings and base sentencing on factual information (Garrett, 2015; Redlich et al., 2018). However, if a defendant initially created a false alibi and later provides a truthful account for the plea bargain, our results indicate that such statements can contain commission and omission errors and thus be unreliable.

To summarize, our experiment showed that creating a false alibi can lead to commission errors. Additionally, our exploratory analyses revealed that creating a false alibi also led to lower correct memory performance. Although previous research showed that fabrication tends to only lead to errors of commission (Ackil & Zaragoza, 1998, 2011; van Oorsouw & Giesbrecht, 2008), our results suggest that creating a false alibi might involve a mix of deceptive strategies leading to different mnemonic effects.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available on the Open Science Framework at https://osf.io/25zt9/?view_only=fc5e89889e8b4c2e8742a39ef6f88398.

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ENDNOTES

¹ In the preregistration we stated that we needed 128 participants. However, we realized that this calculation was based on a two-tailed independent sample t-test. The primary hypothesis of the study was whether participants that fabricated an alibi had more commission errors than truth tellers. Hence, a one-tailed independent sample t-test was more appropriate.

² The pattern of results was similar between the parametric (independent sample t-tests) and non-parametric analyses (Mann-Whitney U tests).

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How to cite this article: Riesthuis, P., Otgaar, H., De Cort, A., Bogaard, G., & Mangiulli, I. (2022). Creating a false alibi leads to errors of commission and omission. *Applied Cognitive Psychology*, 36(4), 936–945. <https://doi.org/10.1002/acp.3982>