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A Lie and a Mistress: On Increasing the Believability of Your Alibi

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The present study was designed to assess whether or not the presentation method and the salaciousness of an alibi affect its evaluation. Community participants ($n = 150$) were asked to evaluate the salacious or non-salacious alibi of a crime suspect. The alibi was either presented immediately after arrest by the suspect or was changed after the initial alibi turned out to be incorrect. The incorrect alibi was due to either a misrecollection or a deliberate lie. We found that when the initial alibi was changed into a salacious one, the believability increased. This effect was larger when the initial alibi was a lie than when it was a misrecollection. The results of the present study demonstrate that, contrary to common belief, a changed salacious alibi can lead to an increase in alibi believability.

Keywords: alibi believability; changed alibis; salaciousness.

An alibi is the claim that a suspect could not have committed an alleged crime since he or she was somewhere else at the time it took place (Olson & Wells, 2004). Most of the research conducted on alibis to date has addressed the evaluation of suspects' alibis. In such studies, undergraduate students are asked to take on the role of a juror and rate the guilt of a defendant who presented an alibi and potential supportive evidence for it (Allison & Brimacombe, 2010; Allison, Mathews, & Michael, 2012; Culhane & Hosch, 2004; Hosch, Culhane, Jolly, Chavez, & Shaw, 2011; Jung, Allison, & Bohn, 2013; Lindsay, Lim, & Marando, 1986; McAllister & Bregman, 1989; Sargent & Bradfield, 2004). The results of these studies are consistent with the taxonomy of Olson and Wells (2004), showing that the stronger the supportive evidence, the less guilty the participants rated the defendant. It was first thought that only the

strength of the supportive evidence was of importance in determining alibi believability (Olson & Wells, 2004). However, it has become clear that other factors can affect alibi believability, such as the context in which the alibi is first presented (Sommers & Douglass, 2007), the race of the defendant (Sargent & Bradfield, 2004), prior convictions of the defendant (Allison & Brimacombe, 2010), whether or not the presented alibi is salacious (Allison et al., 2012; Allison, Jung, Sweeney, & Culhane, 2014; Jung et al., 2013), and whether or not the presented alibi remains unchanged (Culhane & Hosch, 2012). When an alibi or the supportive evidence for it is changed, this leads to a decrease in alibi believability, even when the supportive evidence becomes stronger according to the taxonomy of Olson and Wells (2004), compared to when the strength of the evidence is maintained (Culhane & Hosch, 2012).

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We can distinguish two phases that precede the evaluation of an alibi: presentation and validation with supporting evidence. Presentation refers to the suspect's statement in which it is stated that he or she could not have committed the crime on the basis of having been somewhere else at the time it was committed (Burke, Turtle, & Olson, 2007). The suspect can subsequently validate the alibi by reporting supporting evidence for his or her alibi. The supportive evidence can consist of three forms of supportive evidence: witness, physical, or knowledge evidence (Nieuwkamp, Horselenberg, & van Koppen, 2016b). From the results of alibi presentation and validation studies we know that about 95% of people can present an alibi and about 90% of them can report supportive evidence for it (Culhane et al., 2013; Culhane, Hosch, & Kehn, 2008; Nieuwkamp, Horselenberg, & van Koppen, 2016a; Olson & Charman, 2012). The results of these studies show that witness evidence (about 80%) is much more common than physical evidence (about 25%). The impact of the believability of physical evidence is larger than the impact of witness evidence (Olson & Wells, 2004), meaning that innocent suspects can more often present supportive alibi evidence that is less likely to be believed than evidence that is more likely to be believed. In fact, the presence of supportive alibi evidence depends upon the day, timeframe and presented alibi, so therefore the base rate of alibis and supportive evidence should also be taken into account to determine its believability (Nieuwkamp et al., *in press a*).

Changed Alibis

Laypeople, undergraduate students, and police officers believe that a true alibi should remain consistent over time (Burke et al., 2007; Culhane & Hosch, 2012; Dysart & Strange, 2012). However, in several cases an innocent man has been convicted merely based upon reporting a false alibi due to misrecollection. For instance, Ronald Cotton reported a false alibi due to misrecollection

for the sexual assault on Jennifer Thompson (Thompson-Cannino, Cotton, & Torneo, 2009); the alibi he presented was truthful, but he described what he was doing on a day different from the day on which the sexual assault had taken place. This mistake, combined with multiple errors in the eyewitness identification, led to a wrongful conviction.

Not only case studies but also the results of empirical studies suggest that alibis or the supportive evidence for them from innocent people are more often changed than we might think (Olson & Charman, 2012). Olson and Charman (2012) found that when participants were asked to provide an alibi in the distant past, a change in the alibi or the supportive evidence was more likely to occur (about 24% of the time) than in the near past (about 4%). People are quite accurate in determining *what* they were doing three weeks ago but less accurate *when* they did it that particular day (Strange, Dysart, & Loftus, 2014). Strange et al. (2014) have therefore claimed that inconsistencies in alibis are the norm rather than the exception. Their claim is supported by the finding of Leins and Charman (2013), who found that when innocent suspects present an alibi, they heavily rely on schemas (i.e. what they would normally be doing at the time and day for which they are asked to present an alibi) rather than relying on their actual memory.

In addition, we know that police interrogations are often quite stressful for suspects (Guyll et al., 2013) and that the retrieval of information can be impaired under stress (Smeets, Otgaar, Candel, & Wolf, 2008). An innocent suspect may therefore report a schema-consistent yet incorrect alibi. Also, an innocent suspect may just have no memory of what he or she was doing, simply because of being unaware that a crime was committed at that particular time (Kassam, Gilbert, Swencionis, & Wilson, 2009).

If a suspect reports an incorrect alibi and changes his or her alibi or the supportive evidence, it always results in a decrease in alibi believability (Culhane & Hosch, 2012). The

reasons why a suspect changes an alibi can be diverse. The suspect can simply be mistaken due to relying on schemas rather than memory – or the suspect can be lying. To date, research has not been conducted on whether or not the reason why a suspect changes an alibi can affect the evaluation of the alibi. The vast majority of senior law enforcement personnel (about 80%) believe that if an alibi changes, the suspect must have been lying previously rather than simply being mistaken (Dysart & Strange, 2012).

Salacious Alibis

Although it was thought that the alibi story does not influence its believability, it was recently found that the salaciousness of the presented alibi does have an effect. Allison et al. (2012) found that a salacious alibi (watching a pornographic movie) was rated as being more believable compared to a non-salacious alibi (watching a normal movie). In a follow-up study, however, the effect of the alibi salaciousness on believability was not replicated (Allison et al., 2014). In the second study, the suspect was accused of sexually assaulting a woman, instead of being accused of a robbery, a crime that is typically described in alibi research (Allison & Brimacombe, 2010; Allison et al., 2012; Culhane & Hosch, 2004). Thus, in the 2014 study both the presented alibi and the mock crime were salacious. The authors noted that the type of mock crime chosen might explain the inconsistency between the findings of both studies. Differences in alibi believability can therefore be explained by contextual factors (e.g. the type of crime) that affect alibi evaluation (Sommers & Douglass, 2007). However, in another study, the type of mock crime (i.e. sexual assault, physical assault or theft) did not affect alibi believability when a salacious alibi was presented (Jung et al., 2013). To date, it therefore remains unclear why a salacious alibi might sometimes increase alibi believability.

In the current study the participants were presented with either a salacious or a non-

salacious alibi. These alibis were either presented immediately (unchanged) or presented after the suspect presented an incorrect alibi (changed). Besides an honest mistake as a reason for changing the initial alibi (Culhane & Hosch, 2012), we have added a lie as a second reason why the initial alibi was incorrect. A lie was chosen since most of the senior law enforcement personnel believe that a change in the suspect's alibi means that the suspect was lying before (Dysart & Strange, 2012). We expected that the unchanged salacious alibi would be rated as more believable compared to the unchanged non-salacious alibi (Allison et al., 2012). When the alibi was changed, we expected the changed alibi to be less believable, regardless of the reason why it was changed, compared to when the alibi was unchanged. We had no prior expectations for the interactions between salaciousness and the reason why the alibi was changed in terms of alibi believability.

Method

Participants

A total of 150 participants (37 men) from a community sample were recruited for the present study. Of these, 100 participants filled out an online version of the questionnaire using Survey Gizmo (<http://www.surveygizmo.com>). The participants who filled out the online version were friends and acquaintances of the first author. They were in turn asked to send the link to the questionnaire to their family, friends and colleagues.

To check for a possible selection bias of participants, a second group of 50 participants from the community was asked to fill out a paper version of the questionnaire. These participants were recruited at a dance school in Belgium. No differences were observed between the two groups of participants and they were therefore combined.

The participants were between 18 and 74 years old ($M = 31.01$, $SD = 12.9$). Most of them were employed and had a partner with whom they were living (for demographics, see

Table 1. Participant characteristics ($n = 150$).

	%	n
Sex		
Male	24.7	37
Female	75.3	113
Relationship status		
Single	30.0	45
Partner, not living together	18.0	27
Partner, living together	52.0	78
Employment status¹		
Unemployed	5.4	8
Student	25.5	38
Employed	69.1	103
Highest completed education		
Elementary school	0.7	1
Secondary school	24.0	36
Intermediate vocational education	0	0
College or university	75.3	113

Note: ¹: There was one missing value for this characteristic, the valid percentages are displayed.

Table 1). The participants in our sample were most often well educated compared to the average Dutch and Belgian citizen. In our sample, 75.3% of the participants had achieved a bachelor degree either from college or university, while only 28.3% of the Dutch population has such a degree (Centraal Bureau voor de Statistiek, 2013) or 32.7% of the Belgian population (Federale Overheidsdienst Werkgelegenheid, Arbeid en Sociaal Overleg, 2012).

Research Design

The design of the present study consisted of a 2 (salacious, non-salacious) \times 3 (immediate, lied before, mistaken before) mixed factorial design. The participants were randomly assigned to one of the six conditions.

The participants who were asked to evaluate the suspect's changed alibi were first presented with the initial, incorrect alibi. After they had evaluated the incorrect alibi, they were asked to evaluate the second alibi presented by the suspect. They then read the same salacious or non-salacious alibi as used with the immediate group.

Materials

At the beginning of the questionnaire the participants read an informed consent form. After the participants agreed to fill out the questionnaire, they were asked five demographic questions: gender, year of birth, relational status, employment status, and level of education. The participants read a case vignette of a mock crime describing that last Monday there was a burglary at a restaurant around 10:30 pm. Because Monday is the closing day of the restaurant, the revenues from the weekend (€5000) were stolen. One of the suspects was Mark, aged 28, who lived nearby with his wife and two children.

The salacious alibi was similar to the salacious alibi presented by Jung et al. (2013); the suspect was at a hotel with his mistress. In the present study, both the salacious and non-salacious alibis could be supported by a witness: the suspect's cousin. In the salacious alibi, the suspect said that he bumped into his cousin in the hotel lobby; in the non-salacious alibi, the suspect said he was helping his cousin to move out of his apartment.

The participants were then asked to evaluate the alibi on four dependent variables: 1) believability; 2) strength of the supportive evidence; 3) the degree to which the alibi supported the suspect's claim of innocence; and 4) how easy the alibi would have been to fabricate. The participants were asked to score these aspects using a 10 cm Visual Analogue Scale (VAS) (Luria, 1975). The VAS had two labels at the beginning and the end of the bar. The label at the beginning had the lowest value (for example, *extremely unbelievable*) and the label at the end had the highest value (for example, *extremely believable*). For the online version, a slider of 10 cm was used with the same labels.

In the remaining four conditions the participants were asked to rate two alibis. The suspect initially and incorrectly claimed that he had been working that evening and had left work at about 9:00 pm. He said that the records of his punch card would show the time at which he left work. The police

investigation, however, showed that the exit time registered on the card was 7:30 pm rather than 9:00 pm. With that information, the participants were asked to evaluate the incorrect alibi and the supportive evidence on the same four dependent variables.

On a new page, the participants in these four conditions read that the suspect was questioned for a second time about the crime. In a second interrogation, the suspect was confronted with the results of the police investigation. Depending on the condition, the suspect either then said he then realized that he had made a mistake or the suspect admitted that he had lied about his initial alibi. He then presented either a salacious or non-salacious alibi identical to those described above.

After the participants read the second alibi, they were asked to evaluate the changed alibi on the same four dependent variables. Next, all the participants were asked in an open-ended question if they would ask for additional evidence in order to believe the suspect's changed alibi and, if so, what kind of supportive evidence they would require. Lastly, they were thanked and dismissed. The participants could give their email addresses to receive the results after the data analysis.

Results

All the analyses were conducted with a criterion for significance set at $\alpha = .05$ and Bonferroni corrections were applied for multiple testing.

Immediate Salacious and Non-salacious Alibis

The answers of the participants who read the salacious or non-salacious alibi immediately were analysed using a univariate analysis of variance (ANOVA) for each dependent variable. For the four analyses only the alibi believability was rated differently between the two conditions, $F(1, 48) = 12.17, p = .001, \text{partial } \eta^2 = .20$. Contrary to expectations, a non-salacious alibi was rated as being

more believable ($M = 5.62, SD = 1.88$) than the salacious alibi ($M = 3.73, SD = 1.95$). No differences between the groups were observed for their demographics.

Changed Salacious and Non-salacious Alibis

The answers of the remaining four groups of participants, who read a changed salacious or non-salacious alibi, were analysed using a repeated measures ANOVA. The results on the dependent variables were tested in the model over time in combination with the two independent variables: the salaciousness of the alibi and why the initial alibi was changed.

An interaction was observed between the believability measures and the salaciousness of the alibi over time, $F(1, 96) = 5.67, p = .019, \text{partial } \eta^2 = .06$. The alibi believability increased over time depending on the salaciousness of the alibi. Therefore the simple effects were analysed by reference to the level of the salaciousness of the alibi over time. These analyses revealed that when a salacious alibi was presented, the alibi believability increased over time, $F(1, 96) = 13.36, p < .001, \text{partial } \eta^2 = .12$. When a non-salacious alibi was presented, the alibi believability did not change statistically. The interaction between the salaciousness and the presentation method was not statistically significant over time ($p = .084$). A main effect was found for why the initial alibi was changed, $F(1, 96) = 5.35, p = .023, \text{partial } \eta^2 = .05$. An alibi that was changed because of a lie was rated as being more believable ($M = 3.92, SD = 2.30$) compared to when the alibi was a mirecollection ($M = 3.09, SD = 2.73$; see [Table 2](#) for an overview of the mean scores).

An interaction was observed between the perceived strength of the supportive evidence and the reason why the initial alibi was changed over time, $F(1, 96) = 5.72, p = .019, \text{partial } \eta^2 = .06$. The perceived strength of the supportive evidence diminished over time depending on why the initial alibi was changed. Therefore the simple effects were

Table 2. Mean scores (*M*) and standard deviations (*SD*) on Times 1 and 2 (*n* = 100).

Presentation Method	Time 1				Time 2			
	Salaciousness							
	Non-salacious		Salacious		Non-salacious		Salacious	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Believability								
Mistaken before	3.24	2.54	2.06	1.47	2.84	1.94	4.22	2.78
Lied before	2.69	2.56	4.31	2.76	3.34	1.95	5.35	2.61
Average	2.96	2.54	3.19	2.47	3.09	1.94	4.78	2.73
Strength of the evidence								
Mistaken before	4.82	2.85	6.29	2.53	2.51	2.03	2.87	2.12
Lied before	3.30	3.12	5.93	2.80	2.94	2.39	4.10	2.57
Average	4.06	3.06	6.11	2.65	2.72	2.21	3.48	2.41
Contribution to claim of innocence								
Mistaken before	3.52	2.39	1.88	1.50	2.66	2.11	3.03	2.54
Lied before	2.32	1.83	3.40	2.73	2.76	1.82	4.30	2.48
Average	2.92	2.20	2.61	2.32	2.71	1.95	3.67	2.51
Ease of fabrication								
Mistaken before	3.92	2.98	3.34	2.82	2.73	2.92	1.92	1.97
Lied before	3.30	2.47	3.86	2.52	1.50	1.39	3.72	3.33
Average	3.61	2.73	3.60	2.66	2.11	2.35	2.82	2.86

Note: The dependent variables are displayed in boldface

analysed per level of why the initial alibi was changed over time. These analyses showed that the impact of the decline was greater when the initial alibi was a misrecollection, $F(1, 96) = 30.03, p < .001, \text{partial } \eta^2 = .24$, compared to when the alibi presented was a lie, $F(1, 96) = 4.40, p = .039, \text{partial } \eta^2 = .04$. In addition, a main effect was found for the salaciousness of the alibi, $F(1, 96) = 15.35, p < .001, \text{partial } \eta^2 = .14$. The supportive evidence for a salacious alibi was rated as being stronger ($M = 4.78, SD = 2.53$) compared to when the alibi was non-salacious ($M = 3.39, SD = 2.70$).

An interaction was observed between the degree to which the alibi contributed to the suspect's claim of innocence measures and the salaciousness of the alibi over time, $F(1, 96) = 4.70, p = .033, \text{partial } \eta^2 = .05$. The contribution to the suspect's claim of innocence increased over time depending on whether or not the presented alibi was

salacious. Therefore the simple effects were analysed per level of the alibi salaciousness over time. These results show that the contribution only increased for a salacious alibi over time, $F(1, 96) = 6.55, p = .012, \text{partial } \eta^2 = .06$. When the alibi was non-salacious, the contribution did not become larger. No other effects were observed.

The alibi's ease of fabrication decreased over time regardless of the salaciousness or the reason why the alibi was changed, $F(1, 96) = 12.23, p = .001, \text{partial } \eta^2 = .12$. No other effects were observed. See Table 2 for an overview of all the scores for each dependent variable.

The Influence of the Presentation Method and Salaciousness on Alibi Believability

The possible interactions of both independent variables (presentation method and alibi salaciousness) were tested on the dependent

variables, although the participants who read the alibi immediately evaluated fewer alibis than the other participants. The results were therefore analysed per level of the presentation method. The salacious and non-salacious alibis were identical for all participants regardless of the presentation method. The salaciousness and the presentation method (i.e. immediate, lied before, mistaken before) were therefore included in a univariate ANOVA for each of the dependent variables.

For the alibi believability, an interaction was observed between the presentation method and the salaciousness of the alibi, $F(2, 144) = 11.17, p < .001, partial \eta^2 = .13$, so the simple effects were analysed per level of presentation method since it was not identical for all participants. For all three levels of presentation method, statistically

significant differences exist for the alibi believability depending upon the salaciousness of the alibi: immediate, $F(1, 144) = 9.09, p = .003, partial \eta^2 = .06$; mistaken before, $F(1, 144) = 4.83, p = .030, partial \eta^2 = .03$; lied before, $F(1, 144) = 10.32, p = .002, partial \eta^2 = .07$. As discussed above, when the alibi was presented immediately the non-salacious alibi was rated as being more believable than the salacious alibi. When the first alibi was a misrecollection, the salacious alibi was rated as being more believable ($M = 4.22, SD = 2.78$) than the non-salacious alibi ($M = 2.84, SD = 1.94$). When the alibi was a lie, the salacious alibi was rated as being more believable ($M = 5.35, SD = 2.61$) than the non-salacious alibi ($M = 3.34, SD = 1.95$). See Table 3 and Figure 1 for an overview.

Table 3. Mean scores (*M*) and standard deviations (*SD*) for the dependent variables at time 2 (*n* = 150).

Presentation Method	Salaciousness			
	Non-salacious		Salacious	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Believability				
Immediate	5.62	1.88	3.73	1.95
Mistaken before	2.84	1.94	4.22	2.78
Lied before	3.34	1.95	5.35	2.61
Average	3.93	2.25	4.43	2.53
Strength of the evidence				
Immediate	3.68	2.18	2.75	1.65
Mistaken before	2.51	2.03	2.87	2.12
Lied before	2.94	2.39	4.10	2.57
Average	3.04	2.23	3.24	2.20
Contribution to claim of innocence				
Immediate	3.62	2.04	3.12	1.92
Mistaken before	2.66	2.11	3.03	2.54
Lied before	2.76	1.82	4.30	2.48
Average	3.02	2.01	3.49	2.37
Ease of fabrication¹				
Immediate	2.51	2.33	2.33	2.35
Mistaken before	2.73	2.92	1.92	1.97
Lied before	1.50	1.39	3.72	3.33
Average	2.23	2.33	2.69	2.72

Note: The dependent variables are displayed in boldface. There were 11 missing value for this characteristic, the valid percentages are displayed.

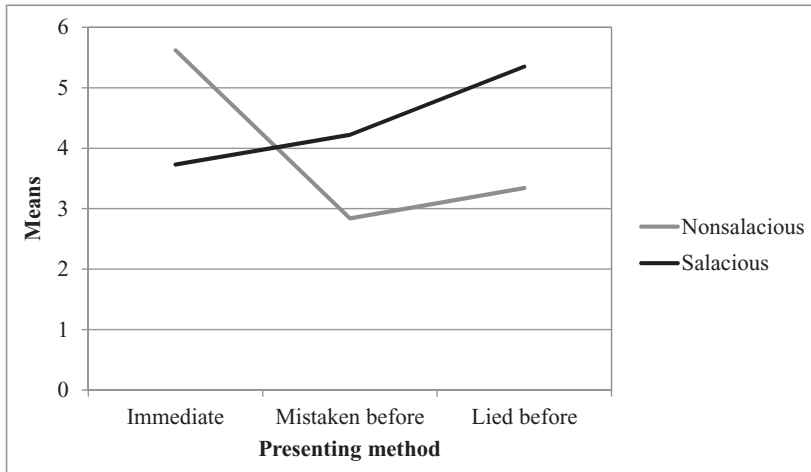


Figure 1. Mean scores for alibi believability.

For the strength of the evidence and the alibi's contribution to the suspect's claim of innocence, no differences were observed among all the participants. For the alibi's ease of fabrication, an interaction was observed between the presentation method and the alibi salaciousness, $F(2, 133) = 5.13$, $p = .007$, *partial* $\eta^2 = .07$.¹ Therefore the simple effects were analysed per level of presentation method. Only when the initial alibi was a lie were differences observed for this aspect, $F(1, 133) = 10.08$, $p = .002$, *partial* $\eta^2 = .07$. When the alibi was salacious it was rated as being easier to fabricate ($M = 3.72$, $SD = 3.33$) than the non-salacious alibi ($M = 1.50$, $SD = 1.39$; see Figure 2).

Additional Evidence

After the participants evaluated the suspect's alibis, they were asked if they would need additional evidence if they were to believe the alibi. Most of the participants (90.0%) wanted additional evidence. It was the case that 90 participants (60.0%) wanted additional physical evidence, of whom 18 more wanted than one item of physical evidence. Furthermore, 72 participants (48.0%) wanted additional witness evidence, of whom 8 wanted more than one witness (see Tables 4

and 5 for an overview of the types of required additional evidence).

To test whether the proportions of required additional evidence were different among the groups, χ^2 tests were conducted for each type of supportive evidence (only physical evidence, only witness evidence, both witness and physical evidence). These tests were conducted for both the salaciousness of the presented alibis and whether or not the alibi was presented immediately or changed. When the participants evaluated a salacious alibi on the one hand, a higher number required additional physical evidence only ($n_o = 38$) than would be expected by chance ($n_e = 32.2$). When the participants evaluated a non-salacious alibi on the other hand, a lower number required additional physical evidence only ($n_o = 25$) than would be expected by chance ($n_e = 30.8$). According to the χ^2 test of independence, the difference is statistically significant, $\chi^2(1, N = 135) = 4.01$, $p = .045$, $\phi = .17$, so it can be inferred that people prefer physical evidence when they are asked to evaluate a salacious alibi.

In addition, when the participants evaluated an alibi that was initially a misrecollection, a higher number required additional physical evidence ($n_o = 28$) than would

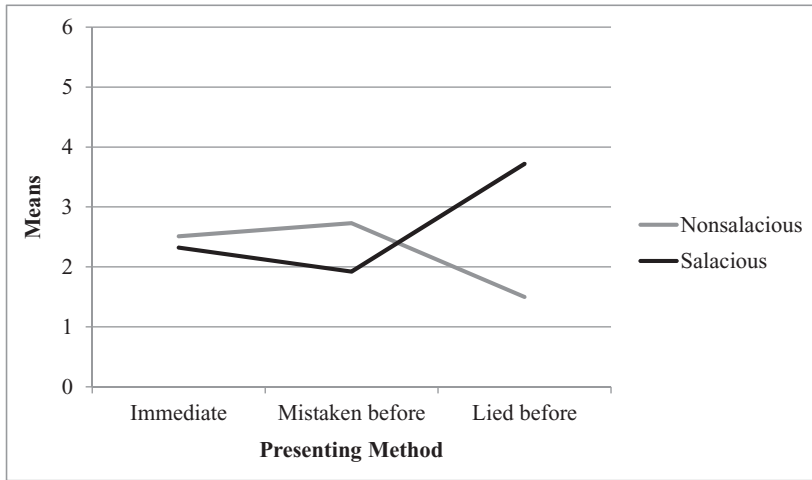


Figure 2. Mean scores for alibi's ease of fabrication.

expected by chance ($n_e = 21.0$). When the participants evaluated an alibi that was presented immediately or was initially a lie, a lower number required additional physical evidence (immediately, $n_o = 15$; lie, $n_o = 20$) than would be expected by chance ($n_e = 21.0$). According to the χ^2 test of independence, the difference is statistically significant, $\chi^2(2, N = 135) = 7.68, p = .022, Cramer's V = .24$. It can therefore be inferred that people prefer physical evidence when they evaluate an alibi that was a misrecollection rather than when it was presented immediately or was initially a lie.

On the contrary, when the participants evaluated an alibi that was presented immediately, a higher number required additional witness evidence ($n_o = 22$) than would be expected by chance ($n_e = 15.0$). When the participants evaluated an alibi that was initially a misrecollection or a lie, a lower number required additional witness evidence (misrecollection, $n_o = 11$; lie, $n_o = 12$) than would be expected by chance ($n_e = 15.0$). According to the χ^2 test of independence, the difference is statistically significant, $\chi^2(2, N = 135) = 7.40, p = .025, Cramer's V = .23$. It can therefore be inferred that people

Table 4. Number of items (n) and percentages (%) of the wanted additional physical supportive evidence.

Type of physical evidence	n	%
Camera recordings	60	55.0
Registration/payment hotel	28	25.7
Telecom (i.e., sent text messages)	6	5.5
Photos	5	4.6
Forensic material (e.g., fingerprints, DNA)	5	4.6
Receipt rental truck/drinks hotel	4	3.7
Moving boxes	1	0.9
Total	109	100.0

Table 5. Number of items (*n*) and percentages (%) of wanted additional witness supportive evidence.

Type of witness evidence	<i>n</i>	%
Neutral witness	30	37.5
Mistress	14	17.5
Nephew	13	16.3
Neighbours	12	15.0
Unclear (i.e., 'witnesses')	6	7.5
Parents	2	2.5
Colleagues	2	2.5
Stranger	1	1.3
Total	80	100.0

are more likely to want witness evidence when they evaluate an alibi which was presented immediately rather than when the alibi was changed, whether due to a misrecollection or a lie.

Discussion

In part, the results of the present study are counterintuitive. It has been thought that alibi believability is merely determined by the strength of the supportive evidence (Olson & Wells, 2004). The strength of the supportive evidence is still an important factor in determining alibi believability (Jung et al., 2013), but we now know that other factors also play a role. Recently, it came to light that the salaciousness of the alibi and whether or not the alibi has been changed also affect its believability, regardless of the strength of the evidence (Allison et al., 2012; Culhane & Hosch, 2012). The results of the present study show that the relationship is even more complex. Changes in the alibi interact with the alibi's salaciousness on its believability measures. These results imply that a change in alibi does not always have to lead to a decrease in its believability, but in fact can cause an increase. In practice this implies that a changed alibi does not necessarily mean that the suspect has been lying, although more than 80% of the senior law enforcement

personnel believe that suspects change their alibi because they lied initially (Dysart & Strange, 2012).

The salaciousness of an alibi in relation to its believability has now been addressed in four studies, including the present one (Allison et al., 2012, 2014; Jung et al., 2013). It was first found that a salacious alibi was more believable than a non-salacious one (Allison et al., 2012). In two later studies, the salaciousness had no effect on the believability (Allison et al., 2014; Jung et al., 2013). In the present study, it was found that an immediately presented non-salacious alibi is more believable than an immediately presented salacious alibi. In all studies apart from the present one, students were used as participants. It can be argued that this difference in participants explains these contrary findings. However, no important differences seem to exist in the evaluation of alibis between students, laypeople and police detectives as participants (Culhane & Hosch, 2012; Nieuwkamp et al., in press b).

Rather than changing the witness evidence to support the alibi (Culhane & Hosch, 2012), we changed the alibi narrative. This narrative change interacted with the salaciousness of the alibi on the alibi believability measures. Only for the salacious alibis were the changed alibis rated as being more believable – and this effect was the largest when the initial alibi was a lie. Although these results are partially contrary to previous findings, they can be explained. A suspect who lied about his initial alibi hoping that his affair with his mistress would remain undiscovered makes more intuitive sense than a suspect who lied about his initial alibi because he did not want to report that he was helping his cousin move out. The effect sizes of the difference between a lie and a misrecollection were however both quite small (.06 and .03, respectively). It can therefore be argued that it does not matter very much whether the initial alibi was a misrecollection and a lie when the suspect gives a salacious alibi afterwards.

Besides introducing a narrative change to the alibis, the present study was the first in which participants were asked what evidence they would require in order to believe the presented alibis. In line with the impact of the supportive evidence from alibi evaluation studies (i.e. the impact of physical evidence is greater than witness evidence for alibi believability; Olson & Wells, 2004), the participants in our study more often required additional physical evidence to support an alibi that was either salacious or a misrecollection. In addition, within the required physical evidence, camera recordings were most often requested. According to the taxonomy, camera recordings are one of the strongest forms of supportive evidence for an alibi. Police detectives also find alibis supported with physical evidence more believable than alibis supported with witness evidence (Dysart & Strange, 2012). In contrast, we know from the base rate of alibis that only about 2% of people report having camera recordings to support their alibis (Nieuwkamp et al., in press a). This finding adds to the assertion of Culhane (2008) that we expect strong evidence in order to believe an alibi, even though it is unrealistic to request such evidence from people.

While most of our participants requested strong evidence in order to believe the presented alibis, the results of the present study equally demonstrate that the content of the presented alibis is also important in relation to the reason why the alibi was changed. Without taking these others factors into consideration together with the strength of the supportive evidence, it is very difficult to fully assess alibi believability. The new insights gained in recent years in combination with the results of the present study suggest that alibi believability needs to be assessed in terms of more than just the strength of the supportive evidence in order to obtain a realistic evaluation. Although the strength of the supportive evidence remains an important aspect of alibi believability, the base rate of alibis cannot be ignored. Whether an innocent suspect has

supportive evidence for his or her alibi and what type of evidence can be expected depends on various factors; therefore the base rate needs to be taken into account when evaluating an alibi (Nieuwkamp et al., in press a). It would thus be too simple to disbelieve an alibi simply due to the absence of strong supportive evidence. The results of the present study also show that the reason why an alibi was changed needs to be taken into account in combination with the content of the revised alibi. Again, it would be too simple to state that every change in an alibi or the evidence for it would render it less believable. In particular cases, such as a suspect lying in an attempt to keep his or her affair a secret, makes intuitive sense – and the results of this study show that if a person is wrongfully accused of having committed a crime, lying to conceal having a mistress might positively contribute to finding the truth due to the real alibi being more convincing once it has been revealed.

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Note

1. The ease with which the alibi could be fabricated was answered by 39 out of the 50 participants who read the alibi immediately; therefore the degrees of freedom differ from those in the previous analysis.

References

- Allison, M., & Brimacombe, C. (2010). Alibi believability: The effect of prior convictions and judicial instructions. *Journal of Applied Social Psychology, 40*, 1054–1084. doi: 10.1111/j.1559-1816.2010.00610.x

- Allison, M., Jung, S., Sweeney, L., & Culhane, S. E. (2014). The impact of illegal alibi activities, corroborator involvement and corroborator certainty on mock juror perceptions. *Psychiatry, Psychology and Law*, *21*, 191–204. doi: 10.1080/13218719.2013.803275
- Allison, M., Mathews, K. R., & Michael, S. W. (2012). Alibi Believability: The Impact of Salacious Alibi Activities. *Social Behavior and Personality: an international journal*, *40*, 605–612. doi: 10.2224/sbp.2012.40.4.605
- Burke, T. M., Turtle, J. W., & Olson, E. A. (2007). Alibis in criminal investigations and trials. In M. P. Toglia, J. D. Read, D. F. Ross, & R. C. Lindsay (Eds.), *The handbook of eyewitness psychology: Memory for events* (Vol. 1, pp. 157–192). Mahwah, NJ: Lawrence Erlbaum Associates.
- Centraal Bureau voor de Statistiek. (2013). Beroepsbevolking; behaalde onderwijs naar herkomst geslacht en leeftijd. [Workforce, education received at home by sex and age]. *Centraal Bureau voor de Statistiek*. from <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=71822ned&LA=NL>.
- Culhane, S. E., & Hosch, H. M. (2004). An alibi witness's influence on mock jurors' verdicts. *Journal of Applied Social Psychology*, *34*, 1604–1616. doi: 10.1111/j.1559-1816.2004.tb02789.x.
- Culhane, S. E., & Hosch, H. M. (2012). Changed alibis: Current law enforcement, future law enforcement, and layperson reactions. *Criminal Justice and Behavior*, *39*, 958–977. doi: 10.1177/0093854812438185
- Culhane, S. E., Hosch, H. M., & Kehn, A. (2008). Alibi generation: Data from U.S. Hispanics and U.S. non-Hispanic Whites. *Journal of Ethnicity in Criminal Justice*, *6*, 177–199. doi: 10.1080/15377930802243395
- Culhane, S. E., Kehn, A., Horgan, A. J., Meissner, C. A., Hosch, H. M., & Wodahl, E. J. (2013). Generation and detection of true and false alibi statements. *Psychiatry, Psychology and Law*, *20*, 619–638. doi: 10.1080/13218719.2012.729018
- Dysart, J. E., & Strange, D. (2012). Beliefs about alibis and alibi investigations: A survey of law enforcement. *Psychology, Crime and Law*, *18*, 11–25. doi: 10.1080/1068316X.2011.562867
- Federale Overheidsdienst Werkgelegenheid, Arbeid en Sociaal Overleg. (2012). Statistieken [Statistics]. *Federale Overheidsdienst Werkgelegenheid, Arbeid en Sociaal Overleg*. from <http://www.werk.belgie.be/moduleDefault.aspx?id=21166-AutoAncher6>
- Guyll, M., Madon, S., Yang, Y., Lannin, D. G., Scherr, K., & Greathouse, S. (2013). Innocence and resisting confession during interrogation: effects on physiologic activity. *Law and Human Behavior*, *37*, 366–375. doi: 10.1037/lhb0000044
- Hosch, H. M., Culhane, S. E., Jolly, K. W., Chavez, R. M., & Shaw, L. H. (2011). Effects of an alibi witness's relationship to the defendant on mock jurors' judgments. *Law and Human Behavior*, *35*, 127–142. doi: 10.1007/s10979-010-9225-5
- Jung, S., Allison, M., & Bohn, L. (2013). Legal decision-making on crimes involving an alibi. *Applied Psychology in Criminal Justice*, *9*, 45–58. doi: 10.1037/t04698-000
- Kassam, K. S., Gilbert, D. T., Swencionis, J. K., & Wilson, T. D. (2009). Misconceptions of memory. The Scooter Libby effect. *Psychological Science*, *20*, 551–552. doi: 10.1111/j.1467-9280.2009.02334.x
- Leins, D. A., & Charman, S. D. (2013). Schema reliance and innocent alibi generation. *Legal and Criminological Psychology*, 1–16. doi: 10.1111/lcrp.12035
- Lindsay, R. C., Lim, R., & Marando, D. C. (1986). Mock-juror evaluations of eyewitness testimony: A test of metamemory hypotheses. *Journal of Applied Social Psychology*, *16*, 447–459. doi: 10.1111/j.1559-1816.1986.tb01151.x
- Luria, R. E. (1975). The validity and reliability of the Visual Analogue Mood Scale. *Journal of Psychiatric Research*, *12*, 51–57.
- McAllister, H. A., & Bregman, M. J. (1989). Juror underutilization of eyewitness nonidentifications: A test of the disconfirmed expectancy explanation. *Journal of Applied Social Psychology*, *19*, 20–29. doi: 10.1111/j.1559-1816.1989.tb01218.x
- Nieuwkamp, R., Horselenberg, R., & Van Koppen, P. J. (2016a). Establishing the base rate of alibis and its supportive evidence. Manuscript in preparation.
- Nieuwkamp, R., Horselenberg, R., & Van Koppen, P. J. (2016b). You don't know: knowledge as supportive alibi evidence. Manuscript in preparation.
- Olson, E. A., & Charman, S. D. (2012). 'But can you prove it?' – examining the quality of innocent suspects' alibis. *Psychology, Crime and Law*, *18*, 453–741. doi: 10.1080/1068316x.2010.505567
- Olson, E. A., & Wells, G. L. (2004). What makes a good alibi? A proposed taxonomy. *Law and Human Behavior*, *28*, 157–176. doi: 10.1023/B:LAHU.0000022320.47112.d3
- Sargent, M. J., & Bradfield, A. L. (2004). Race and information processing in criminal trials: Does the defendant's race affect how the facts are evaluated? *Personality and Social Psychology*

- Bulletin*, 30, 995–1008. doi: 10.1177/0146167204265741
- Smeets, T., Otgaar, H., Candel, I., & Wolf, O. T. (2008). True or false? Memory is differentially affected by stress-induced cortisol elevations and sympathetic activity at consolidation and retrieval. *Psychoneuroendocrinology*, 33, 1378–1386. doi: 10.1016/j.psyneuen.2008.07.009
- Sommers, S. R., & Douglass, A. B. (2007). Context matters: Alibi strength varies according to evaluator perspective. *Legal and Criminological Psychology*, 12, 41–54. doi: 10.1348/135532506x114301
- Strange, D., Dysart, J. E., & Loftus, E. F. (2014). Why errors in alibis are not necessarily evidence of guilt. *Zeitschrift für Psychologie*, 222, 82–89. doi: 10.1027/2151-2604/a000169
- Thompson-Cannino, J., Cotton, R., & Torneo, E. (2009). *Picking Cotton*. New York: St. Martin's Press.