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RESEARCH ARTICLE

The illusion of the perfect alibi: Establishing the base rate of non-offenders' alibis

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Abstract

The present study was designed to establish the base rate of alibis and supportive evidence for alibis of non-offenders. That is important because the presence and lack of an alibi are often seen as a clear indicator of innocence and guilt, respectively, of a suspect. A large sample of laypersons (N = 841) was randomly assigned to one of 32 conditions in which they were asked to generate a true alibi after they were falsely accused of being the perpetrator of a mock robbery. Each condition consisted of either a Tuesday or a Saturday and one of 16 timeframes. In general, the majority of the participants had an alibi (99.5%) and supportive evidence for their alibis (92.4%). The supportive evidence often consisted of a combination of supportive evidence rather than one distinct form of supportive evidence (33.3%). Although it is widely assumed that the alibi believability is determined based on the strength of the supportive evidence, our results show that the type of evidence that can be presented by laypeople depends upon the day and the timeframe wherein the crime has been committed. The results of the study therefore imply that determining alibi believability solely on the strength of the supportive evidence is not a fair measure. We suggest that the believability should also be based on the base rate of alibis and its supportive evidence.

KEYWORDS

alibi, base rate, supportive evidence, taxonomy

1 | INTRODUCTION

Over the years, multiple people have been wrongfully convicted all over the world (e.g., Saks & Koehler, 2005) of which some had an alibi for the moment that the crime was committed to prove their innocence but were not believed

(Burke & Marion, 2012; Burke, Turtle, & Olson, 2007; Dahl & Price, 2012; Simon, 2012). In the criminal justice system, there appears to be an assumption that innocent people can generate an accurate and believable alibi (Olson & Charman, 2012), which means that the alibi should be correct and be supported by strong evidence. For an innocent person, it can, however, be very difficult to provide such strong evidence as also appears in the cases of wrongfully convicted people where convincing evidence is often lacking (Marion, Kukucka, Collins, Kassin, & Burke, 2015). If people were not at the crime scene but elsewhere and they can remember where they were at that time and evidence to support their alibis, it is perhaps the best chance to prove their innocence.

The fact that the alibis of wrongful convicted people were not believed can be explained by the skeptical attitude of police detectives towards suspects in general (e.g., Kassin, Goldstein, & Savitsky, 2003; Meissner & Kassin, 2002; Vrij, 2008) and to their alibis in particular (Dysart & Strange, 2012). If a suspect, for example, changes his alibi, about 80% of the police detectives believe that the suspect lied about the initial alibi and that it is easy for a suspect to fabricate a false alibi (Dysart & Strange, 2012). According to the police detectives, an alibi should be mentioned at the beginning of the criminal investigation, supported by strong evidence, and remains consistent over time, to be believable (Dysart & Strange, 2012).

The skeptical attitude towards alibis does not only appear from wrongful convictions cases but also appears from the results of alibi research. The results from research show that without strong evidence (mock), jurors find the alibi not believable. When evidence is presented, the strength of the evidence is important because the stronger the evidence, the more believable the alibi becomes (e.g., Hosch, Culhane, Jolly, Chavez, & Shaw, 2011; Jung, Allison, & Bohn, 2013).

Research on alibi evidence and research on alibi believability were boosted by the introduction of alibi taxonomy by Olson and Wells (2004). With the taxonomy, the strength of the supportive evidence can be evaluated. The supportive evidence in the taxonomy consists of only witness evidence, only physical evidence, or a combination of both (Culhane et al., 2013; Fawcett, 2015).

From alibi research, we also know that the impact on alibi believability of physical evidence is larger than of witness evidence. Even the weakest form of physical evidence is still considered stronger evidence than the strongest type of witness evidence (Olson & Wells, 2004). The rationale is that witnesses can either be motived to lie in favor of the suspect or that they can be mistaken (Burke & Marion, 2012).

Although recent research also shows that evidence is an influential factor determining alibi believability (e.g., Jung et al., 2013; Pozzulo, Pettalia, Dempsey, & Gooden, 2015), it is also known that, contrary to what Olson and Wells (2004) argued, other factors affect the alibi believability too. For instance, the consistency of the alibi (Culhane & Hosch, 2012; Nieuwkamp, Horselenberg, & Van Koppen, 2016a), the context in which the alibi is first presented (Sommers & Douglass, 2007), and the salaciousness of the alibi (Allison, Jung, Sweeney, & Culhane, 2014; Allison, Mathews, & Michael, 2012; Jung et al., 2013; Nieuwkamp et al., 2016a).

Thus, in order to present a believable alibi, according to both police detectives and scholars, strong evidence is of the essence. It can, however, be questioned if all genuine alibis of non-offenders can meet these expectations of the "perfect" believable alibi. The alibis that were presented in cases of wrongful conviction show that, despite being true, they were not believed because they were not supported by strong enough evidence (e.g., Wells et al., 1998). Given the importance of strong supportive evidence, we will focus in the present paper on the question if such evidence may be expected from non-offenders when asked for their alibis. To determine how realistic the criteria are for the perfect alibi, three sources of information can be examined: cases with wrongful conviction, alibis given in court, and alibis generated by non-offenders.

First, the examination of alibis presented by convicts who were innocent provides little information, besides that not every convict gave an alibi (11 out of 40 cases in the study by Wells et al., 1998) and that if the convict did present an alibi, it was not believed (Connors, Lundregan, Miller, & McEwen, 1996; Garrett, 2011; Simon, 2012; Wells et al., 1998). Because little information is available on the specific alibis in these cases and because these cases only shed a light on the alibis of a specific subpopulation of people (i.e., wrongful convicts), these alibis are not indicative of the alibis of all non-offenders.

A second source of information is the study of alibis presented by defendants in court. A study by Nieuwkamp (2015) showed that only three out of 191 alibis given in court (1.6%) were found to be believable. That is not

surprising because alibis presented in court are found to be less believable than when the same alibi is presented during a police questioning (Sommers & Douglass, 2007). Furthermore, the alibis presented in court typically are supported by relatively weak witness evidence (Nieuwkamp, 2015).

Because trial-based alibis are seriously biased, that is, believed alibis are not presented there, a third source of information can be examined to answer the question how realistic the criteria for the perfect alibi are. The third source of information consists of the alibis that non-offenders can present. By analyzing the alibis of innocent people, the base rate of non-offenders' alibis can be determined. In such studies, also referred to as alibi generation studies (Burke et al., 2007), non-offenders are asked to imagine that they are a suspect of a (mock)crime that they did not commit. They are then asked to describe where they were at the time of the (mock)crime and whether they have evidence to support their alibi. Using that method, knowledge can be gained on what alibis and evidence non-offenders are expected to present when police detectives questions them on their involvement in a crime. The results of base rate research have the potential to provide rich information on what true alibis can be given by non-offenders and also provide information on how likely it is to expect strong supportive evidence of a suspect.

The few studies on determining the base rate of non-offenders' alibis until now show three important things. First, most non-offenders (about 95%) have an alibi, and second, they can support their alibi with evidence (about 90%; Culhane, Hosch, & Kehn, 2008; Culhane et al., 2013; Olson & Charman, 2012). Third, the supportive evidence they present more often consists of witness evidence (about 85%) than of physical evidence (about 25%). These findings led researchers to conclude that a discrepancy seems to exist between which alibis can be presented by non-offenders compared to which alibis are found to be believable (Culhane et al., 2008). The alibis generated by non-offenders are often supported with evidence that is considered to be relatively weak, while strong evidence is required in order for the alibi to be believable. It can therefore be questioned whether determining the alibi believability mainly on the strength of the supportive evidence is a fair measure. Although these studies on alibi generation indicate a critical issue, three important limitations should be mentioned.

First, in all studies, undergraduate students were asked for their alibi for a certain day and time (Allison, Michael, Mathews, & Overman, 2011; Culhane et al., 2008; Culhane et al., 2013; Leins & Charman, 2013; Olson & Charman, 2012; Olson & Wells, 2012). The use of undergraduate students in such studies can, however, be problematic for generalizing the results (Culhane et al., 2008; Eastwood, Snook, & Au, 2016) and to determine which alibis and evidence can be expected by non-offenders in the criminal justice system, because older adults "are more likely to have additional family members (spouse and children) [who could support their alibis] and less likely to spend the same amount of time with friends" (Culhane et al., 2013, p. 627).

In the previous studies on alibi generation, the participants were asked for their alibi mainly in the evening (Allison, Michael, Mathews, & Overman, 2011; Culhane et al., 2008; Culhane et al., 2013), which is a second limitation for the generalizability of the results. Alibis were seldom asked between 9:00 am and 5:00 pm because it "would result in a high number of work-related alibis" (Culhane et al., 2013, p. 627). Only information about the alibis in the evening is available and not about alibis for the morning, the afternoon, or the night. However, crimes occur throughout the entire day (e.g., Felson & Poulsen, 2003), and therefore, establishing the base rate of non-offenders' alibis should cover all times of day on various days because the routines of people may be different on weekdays and in the weekend (Culhane et al., 2008). Next, in all previous studies, the participants were not allowed to use any resources to generate their alibis. Olson and Charman (2012) asked their participants to generate an initial alibi and report possible supportive evidence when they returned to the lab 48 hr later. Between both sessions, the participants were instructed to determine whether or not their alibi was valid or had to be changed, and they were asked to collect the supportive evidence they claimed. About 11% of the participants were mistaken about the presented alibi, and about a quarter of the participants had been mistaken or were unable to collect the reported supportive evidence. Olson and Charman (2012) stated that in practice, police officers might allow suspects to check their personal calendar when asked for their alibi. Olson and Charman (2012) wanted to study the potential memory failures when generating an alibi too, and therefore, the participants in their study were not allowed to use any resources.

Given the limitations, previous alibi studies are perhaps less suited to establish the base rate of alibis and its supportive evidence of the population of non-offenders. Establishing the base rate of alibis is, however, important to determine what the whereabouts of people are at various times and various days, to determine if they can report supportive evidence for it and, if so, what evidence they present. In order to do so, the present study was designed. The first objective of the present study was to establish the base rate of alibis and its supportive evidence of non-offenders. Next, we were in particular interested in what alibis and what types of supportive evidence are reported. Last, we were interested in whether or not one can assume an equal number of alibis and types of supportive evidence among all presented alibis, days, and timeframes.

In line with the results of earlier studies (e.g. Culhane et al., 2013), we first hypothesized that most of our participants would be able to present an alibi. Next, we hypothesized in accordance with previous research findings that the participants would more often have witness evidence than physical evidence to support their alibi (e.g., Culhane et al., 2008; Olson & Charman, 2012). Moreover, we hypothesized that the participants would less often have supportive evidence during the night compared to the other timeframes because most of them are assumed to be asleep. Last, we expected differences in the alibi and supportive evidence between (a) a week and weekend day and (b) between the parts of the day, that is, an interaction between the type of day and the part of the day.

To overcome the limitations of alibi generation research, we have chosen to ask a large sample of people from the community for their alibis to generalize the results to the population of non-offenders. To establish the base rate, we aimed to reach a broader group of participants than only students, although students are also a part of the population of non-offenders. Some might furthermore argue that the base rate of alibis could be determined using actual suspects or convicted criminals. However, in our opinion, a true alibi should differentiate between a guilty and an innocent suspect, because by definition, a guilty suspect cannot present a true alibi for the crime that he or she committed. In addition, asking convicted criminals for their alibis about a mock crime is for three reasons less informative than the alibis of community members. First, asking convicted criminals for their alibi in the near past would highly likely result in an alibi as "I was in jail." Second, if they were asked for their alibis in the period before they got arrested, questioned, and eventually convicted, the study would become a memory study rather than an alibi study. Third, because the majority of the innocent people who were wrongfully convicted had an alibi that was not believed (e.g., Culhane et al., 2013; Wells et al., 1998) in the pre-trial investigation, we believe that the alibis of non-offenders should rather be studied than those people who are convicted. Knowledge of the alibis of non-offenders is necessary to learn the discriminative value of alibis, both given by offenders and non-offenders. Therefore, the present study aims at obtaining a more complete view of the alibis of non-offenders and gaining insight what alibis and evidence are most often reported and as a consequence how likely the perfect alibi is at various days and times.

To address the second limitation in alibi generation research, we decided to ask our participants for their alibis on a wide range of timeframes across days, because crimes can occur throughout an entire day (Felson & Poulsen, 2003). With regard to the last limitation, in the present study, the participants were explicitly instructed that resources could be used to generate their alibi. In the present study, we are not interested in potential memory errors but only in determining what alibis non-offenders can report and what types of supportive evidence they present.

2 | METHOD

2.1 | Participants

Participants from the community responded to an online questionnaire. The questionnaire can be found in the Appendix. They received an e-mail with an online link to the questionnaire. At first, friends, colleagues, and family from the first author were sent an e-mail with the link. They were in turn asked to send their colleagues and friends the link to the questionnaire because we aimed at a large sample of participants, a similar method as used by

Nieuwkamp et al. (2016a). In that study, the authors selected two groups of community members. One group was recruited in the same way as in the present study. To control for a possible selection bias, a second group was recruited at a dance school. No differences were found between groups for their demographics and their answers on the dependent variables. Given that outcome, we believe that a possible selection bias in the selection of participants in the present study does not affect the results in another way than when the participants would have been recruited offline.

The questionnaire was completed by 862 participants of whom 21 participants were excluded. Fifteen participants were excluded because they failed to complete the questions about their alibi and supportive evidence. Six other participants were excluded because they did not complete the questionnaire seriously, for instance, by answering each question with an x. Three participants did not report their gender, and 17 participants did not report their highest completed education. They were nevertheless included in the analyses because it would not hamper the outcomes.

In total, 841 participants (261 men, 31.0%) were included in the analyses. Their ages varied between 17 and 79 years, with a mean age of 30.2, (*SD* = 12.7) and a median of 25.0 years. Most of the participants were employed and had a partner with whom they were living together (see Table 1, for demographics). Most of the participants in our sample were well educated compared to the average Dutch citizen. Because 65.3% of the participants in our sample had achieved a bachelor degree either from college or university, while only 28.3% of the Dutch population has such a degree (CBS, 2013), our participants are higher educated compared to the average at the time of data collection.

2.2 | Research design

We tested our hypotheses using a 2 (day: Tuesday and Saturday) × 4 (time: morning, afternoon, evening, and night) between-subjects factorial design. Two different days (i.e., Tuesday and Saturday) were chosen because the activities of people may vary between weekdays and weekend days (Culhane et al., 2008). Although Culhane et al. (2008) did not find a difference between both days, the authors argued that differences between the days might exist when

TABLE 1 Participant characteristics (proportions) *N* = 841

Sex[a]		
Male	261	(0.31)
Female	577	(0.69)
Relationship status[a]		
Single	259	(0.31)
Partner, not living together	240	(0.29)
Partner, living together	339	(0.40)
Employment status[a,c]		
Unemployed	44	(0.05)
Student	288	(0.34)
Employed	506	(0.60)
Highest completed education[b,c]		
Elementary school	19	(0.02)
Secondary school	196	(0.23)
Intermediate vocational education	71	(0.08)
College or university	538	(0.64)

Note: The dependent variable is displayed in boldface.

[a]Three missing values, only valid percentages are displayed.

[b]Seventeen missing values, only valid percentages are displayed.

[c]The proportions do not count to 1 due to rounding.

testing non-student adults. The 4-day parts consisted each of four times: the morning (06:45–10:45 am), the afternoon (1:45–5:45 pm), the evening (6:45–9:45 pm), and the night (11.45 pm–4:45 am). The timeframes were chosen based upon when most robberies were committed per hour on a single day (Felson & Poulsen, 2003), because the participants had to present their alibi for a mock robbery. The timespan varied between the day parts because only the highest numbers of robberies were included (Felson & Poulsen, 2003). The combination of "day" and "time" results in eight conditions, and each condition had a minimum of 80 participants. The responses over the conditions were not equally distributed because for each condition, a new link to the questionnaire was randomly created. It caused an unequal distribution over the timeframes for which we controlled in our analysis (see Table 2, for the number of participants per day and time).

2.3 | Materials

After the participants read an informed consent, they were presented with the questionnaire that consisted of four parts: demographics, case vignette, alibi generation, and last, report possible supportive evidence for it.

The case vignette detailed that a mock robbery was committed last Tuesday or Saturday at one of the timeframes. A robbery was chosen as mock crime comparable to previous studies (e.g., Allison et al., 2014; Allison et al., 2012; Culhane & Hosch, 2004, 2012; Eastwood et al., 2016; Pozzulo et al., 2015). To increase the ecological validity, we asked the participants to imagine that he or she was a suspect and that the police asked them where they had been during the robbery. In previous studies, the participants were only asked to generate an alibi for a particular day and time (e.g., Culhane et al., 2013). The participants in the present study were asked for their alibis for either last Tuesday or Saturday (range: 1–7 days). A delay not greater than 7 days was chosen because people can remember up to 90% of the details from a one-time experience about a week ago (Wagenaar, 1986). In addition, they were explicitly instructed that they could use resources (e.g., agenda or diaries) to determine where they had been because the results from memory studies show that participants can reliably reconstruct memories using such cues up to 6 years ago (Odinot & Wolters, 2006).

Comparable to the method used by Allison, Michael, Mathews, and Overman (2011), the participants were first asked to write down their alibi in an open-ended question as detailed as possible. Afterwards, they were asked in a cued-recall question if they could support their alibi with physical evidence (e.g., camera recordings or a receipt). In case they had physical evidence, they were asked of what item(s) the physical evidence consisted. Similar to the method of Culhane, Hosch, and Kehn (2008), participants reported the physical evidence in an open-ended question. Next, they were asked if their alibi could be supported by witness evidence. If they reported witness evidence, they were asked to indicate their relationship with the alibi witness(es) in a cued question listing six types of witnesses. Four types of witnesses were identical to those used in the study by Olson and Charman (2012): "family member," "friend," "acquaintance," and "stranger." A family member is closely related to the suspect and may therefore have a possible motive to lie in favor of the suspect. A friend and a co-worker (Culhane et al., 2008) also might have a possible motive to lie for the suspect but into a lesser degree than a family member. Those types of witnesses are therefore referred to as a motivated familiar other witness (Olson & Wells, 2004). An acquaintance (e.g., the neighbor) is a type of non-motivated familiar other witness (Culhane et al., 2008; Olson & Wells, 2004) and is characterized by a large relational distance to the suspect while also being familiar to the suspect and therefore being unlikely to be mistaken about the suspect's identity. A stranger also has no motive to lie but can be mistaken about the suspect's identity and is therefore referred to as a non-motivated stranger (Olson & Wells, 2004). We added "partner" to the list of possible alibi witnesses as another witness who is a motivated familiar other witness. Last, we asked the participants whether or not they had any other additional supportive evidence that they had not mentioned before to support their alibi. The participants were then thanked for their cooperation and given the opportunity to provide their contact information if they wanted to receive a brief summary of the study results once the data were analyzed.

TABLE 2 Alibi frequency for Tuesday and Saturday per timeframe (proportions)

	Tuesday				Saturday				Total
Alibi	Morning *N* = 84	Afternoon *N* = 89	Evening *N* = 165	Night *N* = 115	Morning *N* = 102	Afternoon *N* = 93	Evening *N* = 102	Night *N* = 91	*N* = 841
No alibi	1 (0.01)	1 (0.01)	0 (0.00)	1 (0.01)	0 (0.00)	1 (0.01)	0 (0.00)	0 (0.00)	4 (0.01)
At home	40 (0.48)	33 (0.37)	92 (0.56)	88 (0.77)	66 (0.65)	39 (0.42)	43 (0.42)	66 (0.73)	467 (0.56)
At work	16 (0.19)	24 (0.27)	5 (0.03)	1 (0.01)	6 (0.06)	10 (0.11)	7 (0.07)	2 (0.02)	71 (0.08)
On holiday	4 (0.05)	3 (0.03)	0 (0.00)	1 (0.01)	3 (0.03)	4 (0.04)	7 (0.07)	3 (0.03)	25 (0.03)
On the go	9 (0.11)	9 (0.10)	13 (0.08)	3 (0.03)	7 (0.07)	9 (0.10)	1 (0.01)	0 (0.00)	51 (0.06)
With friends	1 (0.01)	1 (0.01)	13 (0.08)	0 (0.00)	1 (0.01)	1 (0.01)	7 (0.07)	4 (0.04)	28 (0.03)
Playing sports	0 (0.00)	2 (0.02)	7 (0.04)	1 (0.01)	3 (0.03)	4 (0.04)	1 (0.01)	1 (0.01)	19 (0.02)
In class	6 (0.07)	5 (0.06)	5 (0.03)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	17 (0.02)
At the hospital	1 (0.01)	1 (0.01)	1 (0.01)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.01)
At the library	1 (0.01)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.00)
With partner	1 (0.01)	3 (0.03)	7 (0.04)	7 (0.06)	1 (0.01)	1 (0.01)	4 (0.04)	3 (0.03)	27 (0.03)
At a repetition	0 (0.00)	0 (0.00)	3 (0.02)	0 (0.00)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.01)
With family	1 (0.01)	2 (0.02)	5 (0.03)	2 (0.02)	7 (0.07)	6 (0.07)	11 (0.11)	4 (0.04)	38 (0.05)
Lunch/diner	0 (0.01)	0 (0.00)	7 (0.04)	7 (0.06)	0 (0.00)	3 (0.03)	0 (0.00)	4 (0.04)	32 (0.04)
Outside	0 (0.00)	2 (0.02)	2 (0.01)	1 (0.01)	2 (0.02)	4 (0.04)	0 (0.00)	1 (0.01)	12 (0.01)
At the cinema	0 (0.00)	0 (0.00)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.01)	1 (0.01)	3 (0.00)
At a reception	0 (0.00)	0 (0.00)	4 (0.02)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (0.01)
At a concert or event	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.04)	2 (0.02)	2 (0.02)	13 (0.02)
Shopping	1 (0.01)	2 (0.02)	0 (0.00)	0 (0.00)	5 (0.05)	7 (0.08)	6 (0.06)	0 (0.00)	15 (0.02)
With a client	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.00)
At a wedding	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.01)	0 (0.00)	1 (0.00)

Note: The proportions in the columns do not consistently count to 1 due to rounding.

3 | RESULTS

No differences between men and women are found in the analyses. To avoid redundancy in describing the results, potential differences due to gender are not discussed.

3.1 | Alibis

If the participant was able to describe where he or she had been, the answer was coded as an alibi. If the participant answered "I don't know" or "I cannot remember," it was coded as no alibi. In general, almost all of the participants were able to report an alibi (*N* = 837; 99.5%). The presented alibis of the participants were post hoc categorized into 19 alibi locations (see Table 2, for an overview of the presented alibis).

3.2 | Supportive evidence

The vast majority of participants reported to have supportive evidence (*N* = 777; 92.4%) that most often consisted of only witness evidence or a combination of evidence. All the types of evidence are displayed in Table 3.

3.2.1 | Physical evidence

About 25% (*N* = 209) of the participants reported to have at least one item of physical evidence, and of them, 37 participants (17.7%) had more than one item to support their alibi. They described a total of 260 items (range 1–5 items), and these items were post hoc clustered into 19 categories (see Table 4, for an overview). Most of the participants reported a receipt (32%), one of the weakest items of physical evidence, while only 7% of the participants reported video recordings on the items of strong physical evidence.

3.2.2 | Witness and additional evidence

A total of 757 (90.0%) of the participants reported that at least one witness could support their alibi; however, most of them (*N* = 537; 63.9%) reported more than one alibi witness. They reported a total of 1,363 witnesses (see Table 5, for an overview). About 65% of the participants reported the weakest alibi witness (i.e., a motivated familiar other), while a stronger alibi witness was only reported by 16% of the participants.

Additional evidence was reported by 117 participants (13.9%). Besides the classic types of supportive evidence (witness and physical evidence), nine participants (1.1%) reported a type of evidence that could be categorized as knowledge evidence (e.g., someone who reported to have been at home without witness or physical evidence but the participant reported the content of all the television shows he had watched that evening). The last type of evidence reported was categorized as unclear evidence (*N* = 14; 1.7%). It was categorized as unclear evidence when it could not directly be linked to the presented alibi and/or to the time when the alleged crime took place (e.g., someone who reported to have been running through the forest and said that the mud on his running shoes could support his alibi).

The supportive evidence varied between the presented alibis (see Table 6, for an overview). When the participant had no evidence to support his alibi, he was most often at home. When the participant only had witness evidence, he was most likely to be with friends, at the library, at a repetition, with their families, or at the cinema. Last, the combination of physical and witness evidence was most likely when the participant was at work, in class, or at a concert. Thus, it appears that the presented alibi influences which supportive evidence can be expected. In the next section, the differences among the conditions will be discussed.

TABLE 3 Frequencies of supportive evidence for Tuesday and Saturday per timeframe (proportions)

	Tuesday				Saturday				
Supportive evidence	Morning *N* = 84	Afternoon *N* = 89	Evening *N* = 165	Night *N* = 115	Morning *N* = 102	Afternoon *N* = 93	Evening *N* = 102	Night *N* = 91	Total *N* = 837[a]
No evidence	10 (0.12)	7 (0.08)	7 (0.04)	15 (0.13)	7 (0.07)	4 (0.04)	5 (0.05)	13 (0.14)	67 (0.08)
Witness evidence only	42 (0.50)	44 (0.49)	99 (0.60)	78 (0.68)	62 (0.61)	46 (0.49)	51 (0.50)	58 (0.64)	478 (0.57)
Physical evidence only	1 (0.01)	1 (0.01)	4 (0.02)	1 (0.01)	1 (0.01)	1 (0.01)	1 (0.01)	0 (0.00)	10 (0.01)
Additional evidence only	0 (0.00)	1 (0.01)	1 (0.01)	1 (0.01)	1 (0.01)	1 (0.01)	2 (0.02)	0 (0.00)	6 (0.01)
Combination of witness and physical evidence	20 (0.24)	26 (0.29)	30 (0.18)	13 (0.11)	19 (0.19)	26 (0.28)	26 (0.25)	10 (0.11)	170 (0.20)
Combination of witness, physical, and additional evidence	0 (0.00)	0 (0.00)	7 (0.04)	2 (0.02)	2 (0.02)	7 (0.08)	6 (0.06)	2 (0.02)	26 (0.03)
Combination of physical evidence and additional evidence	1 (0.01)	1 (0.01)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.01)	3 (0.00)
Combination of witness evidence and additional evidence	10 (0.12)	9 (0.10)	18 (0.11)	6 (0.05)	10 (0.10)	9 (0.10)	12 (0.12)	7 (0.08)	81 (0.10)

Note: The proportions in the columns do not consistently count to 1 due to rounding.

TABLE 4 Frequency of reported items physical evidence for Tuesday and Saturday per timeframe (proportions)

	Tuesday				Saturday				
	Morning *N* = 22 (26.2%)	Afternoon *N* = 28 (31.5%)	Evening *N* = 41 (24.8%)	Night *N* = 16 (13.9%)	Morning *N* = 22 (21.6%)	Afternoon *N* = 34 (36.6%)	Evening *N* = 33 (32.4%)	Night *N* = 13 (14.3%)	Total *N* = 209[a] (24.9%)
Video recordings	0 (0.00)	2 (0.11)	1 (0.06)	1 (0.06)	2 (0.11)	7 (0.39)	5 (0.28)	0 (0.00)	18 (0.07)
Photographs	3 (0.23)	1 (0.08)	0 (0.00)	1 (0.08)	0 (0.00)	3 (0.23)	5 (0.38)	0 (0.00)	13 (0.05)
Punch card records	2 (0.29)	2 (0.29)	0 (0.00)	0 (0.00)	1 (0.14)	1 (0.14)	1 (0.14)	0 (0.00)	7 (0.03)
Personal public transportation cards	2 (0.13)	3 (0.23)	7 (0.46)	0 (0.00)	1 (0.07)	0 (0.00)	1 (0.07)	1 (0.07)	15 (0.06)
Telephone records	0 (0.00)	2 (0.18)	3 (0.17)	0 (0.00)	0 (0.00)	1 (0.09)	2 (0.18)	3 (0.17)	11 (0.04)
Computer logs (e.g., e-mails sent)	5 (0.14)	3 (0.08)	12 (0.33)	7 (0.19)	1 (0.03)	3 (0.08)	3 (0.08)	2 (0.06)	36 (0.14)
Ticket stubs	0 (0.00)	1 (0.13)	1 (0.13)	1 (0.13)	3 (0.38)	1 (0.13)	1 (0.13)	0 (0.00)	8 (0.03)
Receipts	8 (0.10)	9 (0.11)	10 (0.12)	6 (0.07)	7 (0.08)	21 (0.25)	15 (0.18)	7 (0.08)	83 (0.32)
Checking in records (e.g., the gym)	1 (0.09)	4 (0.36)	3 (0.27)	2 (0.18)	1 (0.09)	0 (0.00)	0 (0.00)	0 (0.00)	11 (0.04)
Video recordings of personal vehicle	1 (0.50)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.01)
Airline tickets	1 (0.17)	0 (0.00)	1 (0.17)	0 (0.00)	1 (0.17)	1 (0.17)	1 (0.17)	1 (0.17)	6 (0.02)
Reservations	1 (0.09)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.09)	3 (0.27)	1 (0.09)	4 (0.36)	11 (0.04)
Bank transactions	2 (0.50)	1 (0.25)	0 (0.00)	0 (0.00)	1 (0.25)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.02)
Appointment cards (i.e., a family doctor)	2 (1.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.01)
Timetables	2 (0.33)	1 (0.17)	1 (0.17)	0 (0.00)	2 (0.33)	0 (0.00)	0 (0.00)	0 (0.00)	6 (0.02)
Logbooks (e.g., attendance sheet)	2 (0.10)	4 (0.20)	4 (0.20)	0 (0.00)	4 (0.20)	4 (0.20)	2 (0.10)	0 (0.00)	20 (0.08)
Stamp on savings card	0 (0.00)	0 (0.00)	1 (1.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.00)
Wristbands (e.g., of a festival attended)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	2 (0.01)
Payslips	0 (0.00)	1 (0.20)	0 (0.00)	0 (0.00)	3 (0.60)	0 (0.00)	0 (0.00)	1 (0.20)	5 (0.02)
Total items physical evidence	32 (0.12)	34 (0.13)	45 (0.17)	19 (0.07)	28 (0.11)	45 (0.17)	38 (0.15)	19 (0.07)	260 (1.00)[b]

[a]Percentage of all participants with physical evidence regardless of the condition.

[b]The proportions in the column does not consistently count to 1 due to rounding.

TABLE 5 Frequency of reported witnesses for Tuesday and Saturday per timeframe (proportions).

	Tuesday				Saturday				
	Morning *N* = 72 (85.7%)	Afternoon *N* = 79 (88.8%)	Evening *N* = 154 (93.3%)	Night *N* = 99 (86.1%)	Morning *N* = 93 (91.2%)	Afternoon *N* = 88 (94.6%)	Evening *N* = 95 (93.1%)	Night *N* = 77 (84.6%)	Total *N* = 757[a] (90.0%)
Partner	24 (0.07)	26 (0.07)	61 (0.17)	55 (0.15)	46 (0.13)	51 (0.14)	45 (0.13)	50 (0.14)	358 (0.26)
Family member	16 (0.05)	19 (0.06)	65 (0.22)	33 (0.11)	47 (0.16)	38 (0.13)	48 (0.16)	31 (0.10)	297 (0.22)
Friend	21 (0.10)	19 (0.09)	62 (0.28)	25 (0.11)	20 (0.09)	22 (0.10)	32 (0.15)	19 (0.09)	220 (0.16)
Colleague	17 (0.19)	17 (0.19)	15 (0.17)	8 (0.09)	7 (0.08)	12 (0.13)	9 (0.10)	5 (0.06)	90 (0.07)
Acquaintance	27 (0.12)	24 (0.11)	49 (0.22)	25 (0.11)	23 (0.11)	19 (0.09)	31 (0.14)	20 (0.09)	218 (0.16)
Stranger	23 (0.13)	34 (0.19)	33 (0.18)	10 (0.06)	18 (0.10)	28 (0.16)	26 (0.14)	8 (0.04)	180 (0.13)
Total witnesses	128 (0.09)	139 (0.10)	280 (0.21)	156 (0.11)	161 (0.12)	170 (0.12)	191 (0.14)	133 (0.10)	1363 (1.00)

[a]Percentage of all participants with witness evidence regardless of the condition.

TABLE 6 Frequencies of supportive evidence per presented alibi (proportions)

	Supportive evidence								
Alibi	No evidence *N* = 64	Only witness evidence *N* = 480	Only physical evidence *N* = 10	Only additional evidence *N* = 7	Combination of witness and physical evidence *N* = 170	Combination of witness and additional evidence *N* = 81	Combination of physical and additional evidence *N* = 3	Combination of witness, physical, and additional evidence *N* = 26	Total *N* = 837
At home	66 (0.14)	314 (0.67)	5 (0.01)	5 (0.01)	37 (0.08)	41 (0.09)	2 (0.00)	2 (0.00)	467 (0.56)
At work	0 (0.00)	25 (0.35)	0 (0.00)	0 (0.00)	36 (0.51)	7 (0.10)	0 (0.00)	3 (0.04)	71 (0.08)
On holiday	0 (0.00)	10 (0.40)	0 (0.00)	0 (0.00)	12 (0.48)	1 (0.04)	0 (0.00)	2 (0.08)	25 (0.02)
On the go	1 (0.02)	24 (0.47)	3 (0.06)	0 (0.00)	13 (0.26)	5 (0.10)	1 (0.02)	4 (0.08)	51 (0.06)
With friends	0 (0.00)	17 (0.61)	0 (0.00)	0 (0.00)	5 (0.18)	5 (0.18)	0 (0.00)	1 (0.04)	28 (0.03)
In class	0 (0.00)	6 (0.31)	0 (0.00)	1 (0.05)	7 (0.37)	1 (0.05)	0 (0.00)	4 (0.21)	19 (0.03)
Playing sports	0 (0.00)	8 (0.47)	0 (0.00)	0 (0.00)	9 (0.53)	0 (0.00)	0 (0.00)	0 (0.00)	17 (0.02)
At the hospital	0 (0.00)	1 (0.25)	0 (0.00)	0 (0.00)	2 (0.50)	0 (0.00)	0 (0.00)	1 (0.25)	4 (0.00)
At the library	0 (0.00)	2 (1.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.00)
With partner	0 (0.00)	17 (0.63)	0 (0.00)	0 (0.00)	4 (0.15)	0 (0.00)	0 (0.00)	2 (0.07)	27 (0.03)
At a repetition	0 (0.00)	3 (0.75)	0 (0.00)	0 (0.00)	1 (0.25)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.00)
With family	0 (0.00)	24 (0.63)	0 (0.00)	0 (0.00)	6 (0.16)	7 (0.18)	0 (0.00)	1 (0.03)	38 (0.04)
Lunch/diner	0 (0.00)	11 (0.34)	0 (0.00)	0 (0.00)	16 (0.50)	2 (0.06)	0 (0.00)	3 (0.09)	32 (0.04)
Outside	0 (0.00)	3 (0.25)	0 (0.00)	0 (0.00)	3 (0.25)	4 (0.33)	0 (0.00)	2 (0.17)	12 (0.01)
At the cinema	0 (0.00)	2 (0.67)	0 (0.00)	0 (0.00)	1 (0.33)	0 (0.00)	0 (0.00)	0 (0.00)	3 (0.00)
At a reception	0 (0.00)	3 (0.43)	0 (0.00)	0 (0.00)	3 (0.43)	1 (0.14)	0 (0.00)	0 (0.00)	7 (0.01)
At a concert or event	0 (0.00)	4 (0.31)	0 (0.00)	0 (0.00)	8 (0.62)	0 (0.00)	0 (0.00)	1 (0.08)	13 (0.02)
Shopping	0 (0.00)	4 (0.27)	2 (0.13)	0 (0.00)	3 (0.40)	2 (0.13)	0 (0.00)	1 (0.07)	15 (0.02)
With a client	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.00)
At a wedding	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.00)

Note: The proportions in the columns do not consistently count to 1 due to rounding.

TABLE 7 Frequencies of alibi and supportive evidence per timeframe (proportions)

	Morning *N* = 186	Afternoon *N* = 182	Evening *N* = 267	Night *N* = 206	Total
Alibi	185 (1.00)	**180 (0.99)**	267 (1.00)	205 (1.00)	837
Supportive evidence	17 (0.09)	10 (0.06)	**12 (0.05)**	28 (0.14)	67
Witness evidence only	168 (0.91)	170 (0.94)	255 (0.96)	**177 (0.86)**	770
Physical evidence only	103 (0.56)	**90 (0.50)**	150 (0.56)	135 (0.66)	478
Additional evidence only	2 (0.01)	2 (0.01)	5 (0.02)	**1 (0.01)**	10
Combination of witness and physical evidence	1 (0.01)	1 (0.01)	3 (0.01)	**1 (0.01)**	6
Combination of witness and additional evidence	39 (0.21)	52 (0.29)	56 (0.21)	**23 (0.11)**	170
Combination of physical and additional evidence	20 (0.11)	18 (0.10)	30 (0.11)	**13 (0.06)**	81
Combination of witness, physical, and additional evidence	1 (0.01)	1 (0.01)	**0 (0.00)**	1 (0.01)	3

Note. The proportions displayed in boldface are used as a baseline in the binary logistic regression analysis.

3.3 | Differences in alibis and supportive evidence between the conditions

It is interesting to determine if the alibis and evidence of non-offenders differ at various times and between a weekday and the weekend to understand at what time or what day people are most likely to report supportive evidence for their alibis and what type of evidence they can present. In order to do so, binary logistic regression analysis was used because the responses were unequally distributed among the conditions. The baseline for each separate regression was determined with the dependent variable with the lowest overall percentage (see Table 7, for the baselines). For example, if an alibi was least often reported for the afternoon, the afternoon was chosen as the baseline for that variable. In the analysis, we compared the three other timeframes to the baseline and analyzed if possible differences exist between the times and days. For each variable, the factors "day" and "time" and the interaction term were stepwise entered forward in the binary logistic regression analysis.

The day and time did not influence whether or not the participants had an alibi but whether supportive evidence was reported, differed between the conditions (model χ^2 (2, N = 837) = 13.67, p = .001, Nagelkerke R^2 = .038). The participants were 2.59 times more likely to have supportive evidence for their alibi in the evening compared to the night. In addition, on Saturdays, participants were 3.62 times more likely to have supportive evidence in the afternoon compared to the night (see Figure 1).

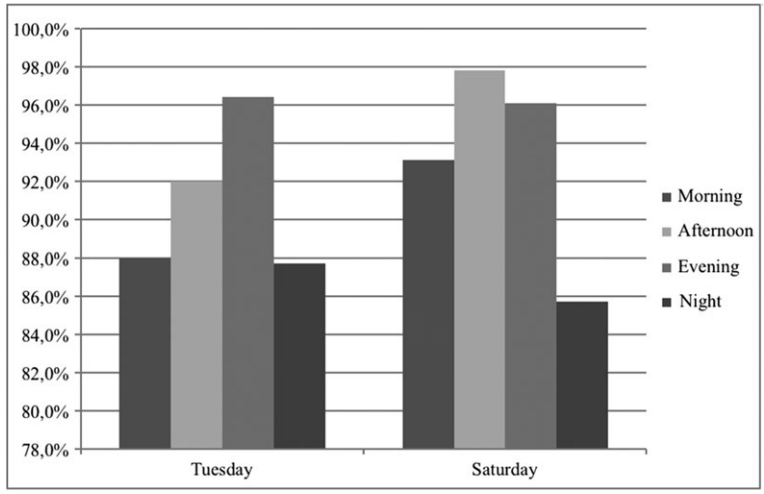

FIGURE 1 Percentages of supportive evidence per days and timeframe

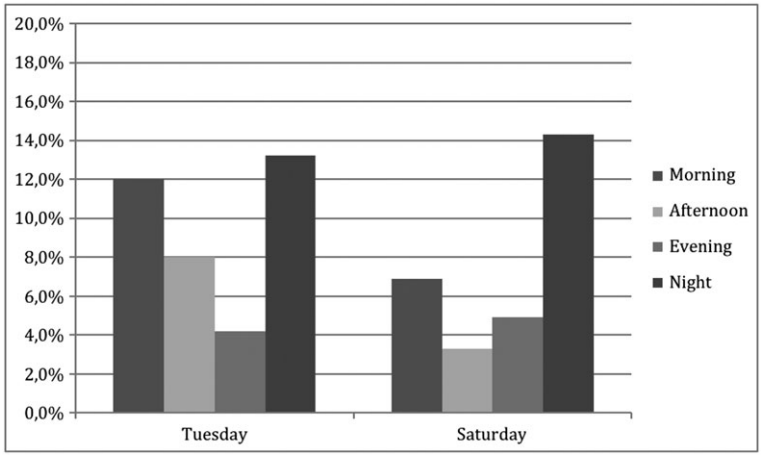

FIGURE 2 Percentages of no supportive evidence per days and timeframe

An alibi in absence of any supportive evidence was 2.83 times more likely to be reported in the night compared to the afternoon (model χ^2 (2, N = 837) = 15.31, p < .001, Nagelkerke R^2 = 0.42). In addition, on Tuesday, the participants were 2.46 times more likely to have no supportive evidence for the alibi in the morning compared to the afternoon (see Figure 2). Although the results seem logical and obvious, the general assumption is also supported by the data. In addition, the results contribute to the understanding of what evidence can be expected by non-offenders at various times. The results imply that a perfect alibi can only be seldom expected of non-offenders. Moreover, the evidence that can be expected by non-offenders varies depending on when the crime is committed.

A combination between witness and physical supportive evidence was 1.80 times more likely to be reported in the afternoon than during the night (model χ^2 (1, N = 774) = 8.65, p = .003, Nagelkerke R^2 = .017). Only witness evidence was 2.25 times more likely for an alibi in the night than in the afternoon (model χ^2 (2, N = 774) = 19.07, p < 0.001, Nagelkerke R^2 = .033). The combination of witness, physical, and additional evidence was 3.74 times more likely to be reported in the evening than in the morning. In addition, such a combination of supportive evidence was 5.92 times more likely to be reported in the afternoon

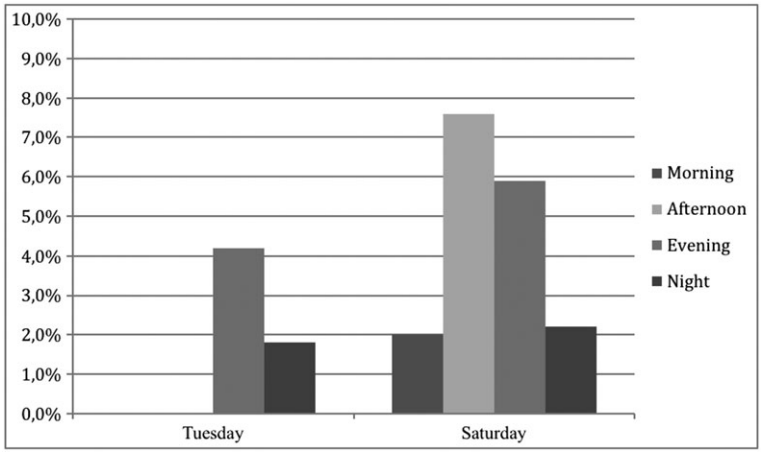

FIGURE 3 Percentages of combination of witness, physical, and additional evidence per day and timeframe

TABLE 8 Stepwise regression of alibis and supportive evidence per day and timeframe

	B	SE (*B*)	Wald (*df* = 1)	*p*	Odds ratio
Supportive evidence[a]					
Step 1					
Constant	2.237	0.142	248.635	<0.001	9.364
Evening versus night	0.820	0.328	6.255	0.012	2.269
Step 2					
Constant	2.103	0.147	204.996	<0.001	8.192
Evening versus night	0.953	0.330	8.348	0.004	2.594
Afternoon versus night only for Saturday	1.287	0.605	4.523	0.033	3.621
No Supportive evidence[a]					
Step 1					
Constant	−2.722	0.165	271.057	<0.001	0.066
Night versus evening	0.878	0.262	11.214	0.001	2.405
Step 2					
Constant	−2.887	0.191	228.866	<0.001	0.056
Night versus evening	1.043	0.297	13.977	<0.001	2.837
Morning versus evening only for Tuesday	0.899	0.387	5.380	0.020	2.456
Combination witness and physical evidence[b]					
Step 1					
Constant	−1.413	0.103	189.616	<0.001	0.243
Afternoon versus night	0.586	0.195	8.984	0.003	1.800
Only witness evidence[b]					
Step 1					
Constant	0.304	0.083	13.486	<0.001	1.356
Night versus afternoon	0.809	0.193	17.675	<0.001	2.250
Combination witness, physical, and additional evidence[b]					
Step 1					
Constant	−3.555	0.233	233.498	<0.001	0.029
Afternoon versus morning only for Saturday	1.082	0.457	5.605	0.018	2.952
Step 2					
Constant	−4.251	0.411	106.896	<0.001	0.014
Evening versus morning	1.319	0.500	6.954	0.008	3.738
Afternoon versus morning only for Saturday	1.778	0.569	9.758	0.002	5.918

Note: The dependent variable is displayed in boldface.

[a]N = 837.

[b]N = 774.

compared to the morning, but only on Saturday (model χ^2 (2, N = 774) = 12.37 p = .002, Nagelkerke R^2 = .062; see Figure 3 and Table 8, for the test results).

4 | DISCUSSION

The objective of the present study was to establish the base rate of alibis and its supportive evidence of non-offenders. Despite the fact that most non-offenders report an alibi, the vast majority of their alibis do not match

the criteria of the perfect alibi by the police because strong evidence is lacking. The reported evidence is more often weak, and the evidence for their alibi differs depending on when the alleged crime was committed (i.e., during the morning, afternoon, evening, or night). In addition, an alibi without supportive evidence—the least believable alibi—is most likely to be expected during the night compared to other timeframes. An alibi supported with evidence is most likely to be expected on Saturday afternoon. The results show that the perfect alibi to which police detectives compare a suspect's alibi is an illusion because only 7% of innocent people can present strong physical evidence (i.e., video recordings), and therefore, the base rate of alibis should be taken into account when evaluating alibis.

The present study was the first in which participants from a large community sample were asked to generate an alibi. Although the results of the present study are comparable to the results from studies with students as participants (e.g., Culhane et al., 2008), we also analyzed the locations of the presented alibis and the reported supportive evidence in more detail than in previous studies. In addition, it came to light that different types of evidence can be expected dependent on the reported alibi location. Olson and Wells (2004, p. 159), however, argued that factors other than the strength of the evidence (such as the alibi location) are unimportant to determine the alibi believability. The results of the present study thus show that what evidence can be expected varies depending on the alibi location.

One of the greatest challenges in the study was to classify supportive evidence. A combination of evidence was reported by about one third of the participants. We have therefore chosen to describe the three forms of supportive evidence separately because we did not know how to determine the strength of the combinations of supportive evidence. Previously, Olson and Charman (2012), for example, only reported the strongest form of witness or physical evidence when multiple items of evidence were reported. Because the amount of alibi witnesses is of great influence to determine the alibi believability rather than the quality of the relationship between the witness and the suspect (Eastwood et al., 2016), we decided to display all the reported evidence.

It also raises the question whether the strength of supportive evidence can be determined with the taxonomy of Olson and Wells (2004). Although Olson and Wells (2004) have determined the strength of the combination of witness and physical evidence, it remains unclear how the strength of a combination of evidence within one category of supportive evidence should be determined. For instance, are two motivated familiar other witnesses (e.g., the suspect's partner and his mother) equally strong witness evidence as one unmotivated familiar other witness (e.g., the suspect's neighbor)? We suggest conducting more research on how to determine the strength of multiple items of supportive alibi evidence presented by one suspect, especially because about 64% of our participants reported more than one alibi witness.

Most of the new additional evidence that was reported in our study consisted of witness or physical evidence. However, nine participants reported additional evidence that could be labeled as unique knowledge evidence. Because about 7% of the participants in earlier studies had an alibi without supportive evidence, it could be the case that they had unique knowledge evidence to support their alibi. In the study by Olson and Charman (2012), the authors provided an example of an uncorroborated alibi:

> *An alibi might be of such nature that there is no way to verify it independently, despite its accuracy. For example, a person who accurately recalls watching television alone for the two hour period during which a crime was committed has no witness and no physical records of his behaviour (Olson & Charman, 2012, p. 5).*

When that person can correctly recall what he or she has watched on television within the 2 hr, it might also be classified as knowledge evidence. More research is needed to determine whether or not the taxonomy of Olson and Wells (2004) could be expanded with knowledge evidence. The first results on how believable the new type of supportive evidence is compared to witness and physical evidence are promising (Nieuwkamp, Horselenberg, & Van Koppen, 2016b). In that study, knowledge evidence is rated to be equally believable as an unmotivated familiar other witness among students, laypersons, and police detectives.

One of the limitations of the present study is that we did not include all the different age groups of the community equally. The average age of the participants was around 30 years (mdn = 25.0), although the range was 17–79 years. The elderly community members were less represented in the present study than the younger ones.

An obvious explanation is that not everyone has access to the Internet and that an online survey is less useful to reach a widespread sample of participants (Dillman, 2002). The results of the present study are therefore less representative for the elderly community members. A selection bias could be a second limitation of the present study because at first, the friends and family of the first author were asked to fill out and forward the questionnaire. Nieuwkamp et al. (2016a) used a similar methodology where a second group of participants (i.e., a sample of community members who were recruited in a dance school) was added to control for a possible selection bias. No difference was observed between both groups of participants for their demographics and their answers on the dependent variables. We therefore believe that the possible effect of a selection bias in the present study would be very small. A third limitation to the study is that only 2 days were chosen for the participants to present and validate an alibi. We chose a Tuesday and a Saturday: one day during the week and one in the weekend. It could be the case that the alibis are different for other weekdays and Sunday, although we could not find a reason why Tuesday and Saturday would be very different. Last, for practical reasons, we did not ask our participants to send the supportive evidence to us. However, we tried to control for that limitation by providing the participants with the opportunity to use all sorts of cues to generate a valid alibi.

The results of the present study can be beneficial to determine how believable an alibi is. For example, when a suspect is asked for his or her alibi during a night, it is known that the suspect is most likely to report only witness evidence (about 66% of the non-offenders). On the one hand, it would be odd to expect strong physical evidence during the night because the base rate indicates that only one person was reported to have such evidence at that moment. On the other hand, the base rate indicates that on Saturday afternoon, camera recordings can most often be expected. Thus, depending on what time the suspect is asked for his or her alibi can influence the reportable supportive evidence. We therefore argue that besides the strength of the supportive evidence, one should also critically examine how likely it is to expect certain evidence at different moments. In addition, when the location of the presented alibi is studied, the evidence that can be expected to support the alibi also varies. When a person says that he or she was at home, it is most likely that the alibi can be supported with only witness evidence (66%) or no evidence (14%). However, when the person says he or she was at a concert or playing sports, a combination between witness and physical evidence is most likely to be expected (62% and 53%), which also implies that the person is highly likely to present an item of physical evidence.

In sum, because most of the alibis of non-offenders are supported by (weaker) evidence that police detectives would not find believable, the strict criteria police detectives demand in practice for a believable alibi are based on an illusion. Furthermore, in alibi research, it was assumed that the alibi believability could be determined by assessing the strength of the supportive evidence. The results of the present study show that one cannot assume supportive evidence regardless of the alibi location and day and time of the alleged crime. Accordingly, the strength of the supportive evidence alone is not indicative of the believability of an alibi and in that sense does not allow for differentiating between innocent and guilty suspects. Especially, it is known that also the consistency and salaciousness, for example, need to be taken into account because these factors also affect the alibi believability.

We therefore argue that also the base rate of alibis and its supportive evidence should be taken into consideration to determine the alibi's believability, both in practice and alibi research.

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APPENDIX

Questionnaire

Informed consent:

By proceeding to the next page, please be informed that your participation is on a voluntary basis which implies that you can stop filling out the questionnaire at any moment in time. All your answers will be processed anonymously. At the end of the questionnaire you can enter your email address if you like to receive a brief summary of the results once the data collection has been completed. Your email address will be stored in another location, so it cannot be traces back to the answers you provided in the questionnaire. If you do not agree with these terms, please close this window.

General questions:

1) What is your gender?

Male

Female

2) What is your year of birth? .....

3) What is your relationship status?

I am single.

I have a partner but we are not living together.

I have a partner and we are living together.

4) What is your employment status?

I am (temporarily) unemployed.

I am a student.

I am employed.

5) What is your higher completed education?

Elementary school

Secondary school

Intermediate vocational education

College or University

Case vignette:

Now carefully read the following text. Some questions about the text will be asked at a later stage.

> *Imagine that last Tuesday night at 01.45 am an armed robbery was committed in your municipality. The robber took the content of the register while pointing a gun at the shop owner. The police have started to look into the robbery and imagine that they have reason to believe you could be a possible suspect in this case. The police therefore want to know where you have been at the time that the aforementioned robbery was committed.*

Alibi generation:

6) Describe as fully as possible where you have been at the time of the aforementioned robbery (use resources such as your agenda or diary when necessary)

.....

.....

.....

.....

Supportive evidence:

7) Can your alibi be supported with physical evidence (an example of physical evidence is a receipt)

Yes, it consists of: .....

No

8) Can a witness support your alibi?

No

1	2	3	4	5 or more

If yes, how many witnesses can support your alibi?

9) What is your relation to the alibi witness(es) from question 8? Please indicate for each category of alibi

Partner	Family member	Friend	Colleague	Acquaintance	Stranger

witnesses the number of witness(es) that could support your alibi, more than one answer is possible.

10) Is there any other evidence that you have not reported yet that could support your alibi?

No

Yes, it consists of: .....

You have reached the end of the questionnaire. Thank you very much for your cooperation!

If you wish to receive a brief summary of the results please leave your email address here: .....