
When do we Believe Experts? The Power of the Unorthodox View

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This paper examines the extent to which orthodoxy (degree of typicality) and congruence (degree of similarity with own opinion) mediate the influence of expert advice on decision makers' judgments. Overall, 227 members of the public and 60 police officers completed an online questionnaire involving an investigation into a child sex offence. Participants were asked to first (i) formulate their own "profile" of a likely offender then (ii) estimate the guilt of two presented suspect descriptions (orthodox vs. unorthodox), and, following the presentation of an "expert's" profile that matched either the orthodox or the unorthodox suspect, (iii) re-evaluate their guilt judgments of the two suspects based on this new advice. Finally, (iv) the perceived similarity (congruence) between the participants' own and the expert profile was assessed. Results revealed two key findings. First, expert profiles that matched a suspect's description elevated perceptions of guilt in that suspect, whilst also, simultaneously, very significantly decreasing the perception of guilt of the alternative suspect. This suggests a powerful rejection and downward revision of the other suspect. Second, perceived similarity of the profile (to one's own profile) was only a significant factor in increasing guilt judgments when assigning guilt to the unorthodox (as opposed to orthodox) suspect. Comparisons of lay judgments with those of police officers revealed few significant differences in effects. The finding that advice is most influential when unorthodox and incongruent suggests that decision makers are more likely to reevaluate judgments when expert advice contributes novel information that contradicts their beliefs. The practical implications of these findings are discussed for profilers, police, and decision research in general. Copyright © 2012 John Wiley & Sons, Ltd.

INTRODUCTION

Organizations seek to assist decision makers by intentionally creating professional subgroups of "knowledge specialists" or advisors to provide unique perspectives and information (Phillips, Mannix, Neale, & Gruenfeld, 2004) that can improve decision accuracy, reduce decision biases (Yaniv, 2004), and increase decision makers' confidence (Van Swol & Snizek, 2005). Given the tendency for people to weight an expert's message as stronger (Chaiken & Maheswaran, 1994), and to defer to their opinion (Steginga, Pinnock, Gardner, & Dunn, 2002), advisors can play a very important role in decision making. This paper seeks to provide greater clarification on how expert

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advice may influence judgments by exploring the effects of expert advice on judgments in criminal investigations.

The context of policing in criminal investigations was selected as the focus for this study because within such complex, high profile, dynamic, and high stake environments (Alison & Crego, 2008) key decision makers frequently consult with a broad range of expert advisors. Indeed, Grieve, Crego, and Griffiths (2007) note that, as such a wide variety of advisors are utilized by the police service, it would be easier to list what they do *not* give advice about rather than what they do contribute to policing. Surprisingly, despite a plethora of research on heuristic processing and decision bias, exploring concepts such as confirmation bias, whereby individuals seek out information to confirm their beliefs (Lord, Ross, & Lepper, 1979), and framing effects, whereby an aspect of an event is perceived as more/less probable based on the way in which information is presented (Mandel, 2005), little research has examined the specific influence of expert advice on the beliefs of police officers. This is despite the potential seriousness of consequences for biases in police judgments, such as the arrest of an innocent suspect or the release of a guilty offender. In particular, little is known about the influence of behavioral investigating advice on officers' final judgments concerning the innocence or guilt of a suspect. Further, as profiling information is not without shortcomings and has a track record of controversy (Alison, Smith, & Morgan, 2003), this provides an interesting context to examine the influence of expert advice across a variety of scenarios by manipulating level of orthodoxy of the advice (how stereotypical it is) and its level of congruence with the decision maker (how far it matches with their opinion).

Consequently, this paper seeks to identify the extent to which offender profilers (experts) influence both police and non-police judgments of suspect guilt in relation to a series of sex offences. This will be achieved by manipulating levels of orthodoxy and congruence. This paper defines "orthodoxy" as the extent to which the suspect description is representative of the stereotypical perception of sex offenders. Thus, if an opinion is "unorthodox", it deviates from the representative view. "Congruence" refers to the degree of similarity between the expert view and an individual's preconceived beliefs. As such, if a decision maker's opinion and expert's advice are "congruent", their beliefs are similar. This provides four possible scenarios based on expert and decision maker congruence and orthodoxy: (i) congruent orthodoxy (both prototypical beliefs); (ii) congruent unorthodoxy (both non-typical beliefs); (iii) incongruent orthodoxy (expert's beliefs are prototypical, decision maker's are non-typical); and (iv) incongruent unorthodoxy (expert's beliefs are non-typical, decision maker's are prototypical).

This paper argues that expert advice will significantly influence police officers' guilt judgments regarding suspects, but that this influence will be greater when the expert view is unorthodox and advice is congruent with the decision maker's beliefs (congruent unorthodoxy), i.e. when both the decision maker and the expert hold an unorthodox view. It is hypothesized that the least powerful effect will be congruent orthodoxy, where both expert and advisor view is orthodox. Thus, the paper will argue that when experts are unorthodox their views will be more persuasive and influential on the decision makers than when their views are simply congruent. As will be discussed below, simplifying cognitive strategies, such as expert opinion, social and representativeness heuristics and confirmation bias, will alter the influence expert advice has on judgments.

The Influence of Expert Advice

An important factor when considering the impact of advice on judgments and decisions is the source of that advice. Yaniv and Kleinberger (2000) note that, when deciding how much “worth” to place on advice, decision makers can range from completely ignoring input to adhering without question. However, the “expert opinion” heuristic suggests that, when advice is provided by an *expert* source, decision makers will predominantly trust and follow advice (Chaiken & Maheswaran, 1994). It has been well documented throughout the literature on influence and persuasion that individuals rely on source expertise when forming attitudes and making judgments (Bohner, Ruder, & Erb, 2002). If an individual views a communicator to be highly credible then they are likely to be persuaded to change their opinion (Sparks & Rapp, 2011), even when the expert’s communication is highly discrepant from the recipient’s original viewpoint (Bochner & Insko, 1966). Indeed, even claims that fly in the face of academic consensus can still exert powerful (and potentially dangerous) effects (Diethelm & McKee, 2009).

One possible body of research which can explain the effects of advice giving relates to the concept of persuasion. Whether this is the effect of consumer recommendations on buying behavior (Simonsohn, 2011) or the influence of the media on public anxiety (Tewksbury, Moy, & Weis, 2004), there is now a considerable body of research on how best to influence opinion. The mechanisms behind these influences are underpinned by complex information processing procedures which have been explored via two models: systematic conceptualization and the heuristic model of persuasion (Chaiken, 1987). It is argued that persuasion follows a dual process model whereby information is either processed *systematically*, through effortful semantic analysis of the content of communications, or via a set of established *heuristics*, where simple adaptable rules are used to reduce the need for systematically processing information (Reimer, Mata, & Stoecklin, 2004). Opinion change favors minimal information processing and thus heuristic cues act as quality indicators in place of systematic, cognitive evaluation (Eagly & Chaiken, 1984). In other words, decision makers would rather rely on simple rules and assumptions than spend time evaluating a message. Thus, heuristic cues can be used to evaluate the persuasiveness of a message without the need for attention to semantic content.

Source credibility is one such peripheral cue that affects appraisals of message reliability (Priester & Petty, 1995). This has been well documented in the research into eyewitness testimony (Spellman & Tenney, 2010), leadership (Mugny, Tafani, Falomir, et al., 2000), communication (Bochner & Insko, 1966), and as an indicator of accuracy in incidents where there is little time to evaluate a message (Tormala, Brinol, & Petty, 2007). Although there remains debate over whether attitude change is dependent on explicit memory formation (Bless, Schwarz, Bodenhausen, & Thiel, 2001), evidence suggests that expert advice can implicitly influence attitude change and thus supports the notion of an expert heuristic (Klucharev, Smidts, & Fernández, 2008). As profilers are viewed to be experts within their field, this paper argues that, when decision makers are introduced to the opinion of an offender profile, they will significantly alter suspect guilt judgments to fall in line with that of the profile (Hypothesis 1).

Offender Profiling

Whilst empirically derived offender profiles, which are based on scientific justification, can be beneficial in complementing police officers’ experience-based judgments and

minimizing potential biases, basing judgments and decisions solely on opinion can have shortcomings. For example, decision makers may become over-reliant on simplifying cognitive heuristics in formulating complex judgments and decisions leading to inaccurate conclusions (for a review see Kahneman, Slovic, & Tversky, 1982). For instance, a US study on traffic police stop and search behaviors found that race was a significant predictor of being stopped by police, as certain races were perceived by the police of fitting the profile of an offender (Williams & Stahl, 2008). Previous research has considered the accuracy of profile predictions (e.g., Kocsis, 2004), the perceived accuracy of profile predictions (e.g., Alison, Smith and Morgan, 2003; Kocsis & Heller, 2004; Kocsis & Middeldorp, 2004), and the perceived usefulness of profiles within genuine investigative scenarios (e.g., Copson, 1995; Jackson, Van Koppen, & Herbrink, 1993). However, despite the use of profiles being particularly controversial and provocative (Alison & Rainbow, 2011), research has failed to examine the effect such expert advice has explicitly on investigators' judgments.

Although the use of profile advice across different international settings is varied and diverse, Alison (2005) argues that it can broadly be categorized into so called "traditional" profiling and "contemporary" behavioral advice. The former involves the development of a "thumbnail pen portrait" of the offender in terms of the likely characteristics (personality, demographics and lifestyle) and, it has been argued, can provide a means by which to trace, implicate and/or eliminate suspects (Alison & Rainbow, 2011). The latter is focused on decision support and hosts a more varied range of contributions (geographic profiling, familial DNA support and linking amongst other various strands).

Traditional perspectives have received heavy criticism on both empirical and theoretical grounds (Alison, Bennell, Mokros, & Ormerod, 2002). For example, there is little supporting evidence that such advice can be reliably generated from complex behavioral trace information (Alison & Ogan, 2006). Alison, Smith, Eastman and Rainbow (2003) have also found that pen portraits can contain redundant, unsubstantiated and ambiguous statements, which may introduce cognitive biases and lead the investigation in the wrong direction. Indeed, research into confirmation bias, which is the tendency for individuals to be more convinced by, pay greater attention to and selectively search for evidence that supports rather than opposes their beliefs (Ross & Anderson, 1982), has been found to play a role in police investigations. Rassin, Eerland, and Kuijpers (2010) found in mock criminal proceedings that additional investigation was guided by participants' initial suspicion of guilt (i.e., to confirm their beliefs) and that the search for incriminating information increased with the severity of crime. Further, Kassin (2005) has argued that confirmation bias can influence the veracity of the investigation, with investigators becoming overly certain of their own instincts, leading to false confessions from pressuring innocent suspects. It has also been found that, once police officers are convinced that a suspect is lying, it is very difficult to change their minds, as they are biased by their initial cognitions (Meissner & Kassin, 2002), and further that such belief persistence continues to play a role even when faced with disconfirming evidence (Lord *et al.*, 1979). However, although it has been documented that initial self-generated perceptions of guilt can cognitively bias and skew criminal investigations due to confirmation bias, the role of external expertly generated offender profiles has been poorly explored.

The limited research conducted into police use of offender profiles (and decision makers' use of expert advice in general) makes it difficult to conclude how much

officers rely on heuristics when they are appraising advice. To the authors' awareness, only one study has examined the use of offender profiles in formulating judgments. Marshall and Alison (2007) examined whether robust profiles alleviate or reinforce biases in uncertainty judgments and whether the congruence and representativeness of this advice affects its influence over probability judgments of suspect guilt. In this study, the authors presented a summary of a series of sex offences against children adapted from Blau (1994), followed by a description of one of two suspects. Informed by Kirby's (1993) distinction between actual vs. stereotypical traits of child molesters, one suspect's description was designed to be representative of an "orthodox" offender whereas the other description presented an "unorthodox", albeit plausible set of characteristics based on existing crime statistics. Due to previous research into belief persistence (Ross & Anderson, 1982), whereby individuals have a tendency to maintain their initial belief and thus engage with confirmation bias by seeking confirmatory (belief-consistent) information whilst discrediting disconfirming (belief-inconsistent) information, the authors anticipated that individuals' judgments would be resistant to change and, as such, resistant to incongruent profiles (i.e., profiles that did not match the suspect's description). Therefore, despite the provision of an offender profile from an *expert*, decision makers would maintain beliefs consistent with their own initial profiles. Furthermore, based on the attribute-substitution account of probability judgments (Kahneman & Frederick, 2002), which proposes that when individuals are having to make judgments about various attributes of another under uncertainty they will utilize heuristics such as availability and representative stereotypes, it was anticipated that individuals would be more resistant to changing their guilt judgments when the suspect was representative of a stereotype than when the suspect was not representative. Yet, contrary to expectations, there was no significant difference in the impact of congruent and incongruent profiles on guilt judgments and there was no significant difference in belief change based on the representativeness of the suspect.

A couple of methodological shortcomings call into question the validity of these null results. First, guilt likelihood judgments for the orthodox/unorthodox suspects and congruent/incongruent profiles were elicited from independent groups. The lack of significant differences in judgments could therefore have arisen from the considerable judgment variability reported for each description. This suggests strong individual differences in the effect of orthodoxy on perceptions of guilt. Data collected with between-subject designs typically involve higher variance as different individuals within each group tend to make judgments relative to different contexts (Birnbau, 1999). Instead, the use of within-subject designs to study subjective judgments may be more appropriate. The present study therefore used a within-subject design that asked participants to judge guilt likelihood of both the orthodox and unorthodox suspect.

Orthodoxy and Congruence

Overall, the central argument of this paper is that offender profiles will influence individuals' guilt judgments, but this influence will be mediated by orthodoxy and congruence. Consequently, simplifying these into categories (unorthodox/orthodox; congruent/incongruent) results in a 2×2 set of influence paths. Listed below is the proposed set of relationships, presented in order of effect from most to least powerful influence of expert advice.

- (i) *Unorthodox congruence*. Both the expert and the decision maker hold an unorthodox view.
- (ii) *Unorthodox incongruence*. The expert holds an unorthodox view which is at odds with the decision maker's orthodox view.
- (iii) *Orthodox incongruence*. The expert holds an orthodox view which is at odds with the decision maker's unorthodox view.
- (iv) *Orthodox congruence*. Both the expert and decision maker hold an orthodox view.

Given the tendency for the aforementioned belief persistence and subsequent confirmation bias, congruence powerfully affects the readiness of decision makers to listen to, act upon and be influenced by expert judgments. Indeed, research suggests that, when judging the reliability of expert advice, individuals judge its worth based on the similarities and inconsistencies with their own views (Harvey & Fischer, 1997; Sniezek & Buckley, 1995). Accordingly, investigators may be more likely to pay attention to and be influenced by offender profiles that support rather than contradict their beliefs. As Copson's (1995) "Coals to Newcastle" report found, officers considered over 50% of offender profiles to be "operationally useful" because they reinforced the officers' own beliefs.

However, previous research has also demonstrated the power of *unorthodox* expert opinions. Throughout the 1970s and 1980s, tobacco companies spent large amounts of money recruiting "scientists" to counteract the growing evidence of the harmful effects of second hand smoke in order to encourage individuals to continue smoking (Diethem, Rielle, & McKee, 2005). More recently, the power of the unorthodox view was demonstrated in a UK scandal that linked the MMR vaccine to autism (Wakefield *et al.*, 1998), leading to widespread panic and continued belief that such a link exists, despite almost all authors since retracting their claim (Murch *et al.*, 2004).

In terms of explaining this effect of unorthodox views, research into social heuristics, whereby individuals have a tendency to be influenced by their perception of the consensus view (Landy, 1972), may provide a potential explanation for the power of unorthodoxy in altering judgments. For example, Gunther, Bolt, Borzekowski, Liebhart, and Dillard (2006) established that, if individuals were told that a public health announcement had been effective on other groups, they were more likely to consider it influential. According to Davison's (1983) third person effect, people estimate the potential effects of a communication on other people, and it is therefore the effect it has on "them" that shapes individual attitudes and behaviors (Xu & Gonzenbach, 2008; Sun, Pan, & Shen, 2008). It is possible that individuals would assume unorthodox expert advice to be more influential on others because it provides expertly sourced, new information and so they adjust their own beliefs to increase consensus. Social support also appears to reduce the need for cognitive dissonance reduction (McKimmie *et al.*, 2003), whereby individuals are motivated to reduce the difference between internal beliefs and contradictory external evidence through either changing their beliefs or dismissing the external source. As such, individuals may change their externally projected opinion in order to reduce dissonance as, although they may not be convinced, they believe their peers can perceive a rational basis for attitude change (Cooper & Fazio, 1984). Thus, the status of an expert may provide the additional social support required for an individual to change their views. As Yaniv (2004) notes, an additional advantage of advisors is that they provide a means through which decision makers may share responsibility for judgment outcomes, allowing them to reduce this pressure.

Thus, given the potential influence that unorthodox expert opinion can have, it is paramount that research focus on the effect of unorthodoxy on persuasion to provide recommendations for combating harmful effects. It is important to make clear however that unorthodoxy is not necessarily problematic and may simply represent a greater level of expertise beyond the norm, and so defining such views in neutral terms may be more appropriate; an unorthodox view may simply be one that less readily comes to mind in the belief system of a novice. Nevertheless, this paper proposes that the relationship between guilt ratings of the suspects before and after receiving a profile will be mediated by how similar they perceive the expert-generated profile to be to their self-generated profiles (Hypothesis 2). This mediating influence will be based on the extent to which the expert is seen as credible (and hence persuasive), due to the representativeness and salience of their advice.

METHOD

Participants

Participants were recruited by opportunity and snowball sampling, the questionnaire was distributed using forensic networks and by contacts of the Centre for Critical and Major Incident Psychology, and had either police or non-police backgrounds (see Table 1 for demographic information). The police officers stated the approximate number of sex-offender cases that they had worked on: 13.3% had never worked on this form of case, 38.3% had worked on fewer than 10 cases, 30% on 10–50 cases, 10% on 51–100 cases, 5% on 101–150 cases and 3.3% on over 200 cases.

Design and Procedure

A two-within (orthodoxy: orthodox suspect–unorthodox suspect) two-between (profile type: orthodox profile–unorthodox profile), two-within (time: pre-profile–post-profile) two-between (profession: police–non-police) mixed design was used.

Table 1. Descriptive statistics showing participant characteristics for the entire sample, and separately for police officers and non-police

	Sample	Police officers	Non-police
<i>N</i>	286	60	226
Mean age (\pm SD)	32.73 (11.32)	43.00 (6.54)	30.08 (10.77)
Gender (M/F)	57/229	13/47	44/182
Education status (% of sample)			
None	1.0	3.3	0.4
GCSE	9.1	18.3	6.6
A-level	20.3	23.3	19.5
Degree	28.3	23.3	29.6
Postgraduate	37.1	26.7	39.8
Other	3.8	3.3	4.0

Education status refers to highest level of academic qualification; one police officer did not complete this question.

The questionnaire and procedure were adapted from Marshall and Alison (2007). All participants were told that the study was entirely voluntary and involved a discussion of a series of sexual assaults against young girls. They were advised that, should the material cause any discomfort or distress, they could withdraw from further participation in the study. It was also explained that all their responses would remain confidential and anonymous. Upon consenting to take part in the study, participants were then asked to imagine that they were a Senior Investigating Officer in charge of investigating a series of offences. They were presented with background information on a series of sexual offences against children and asked what sort of offender they thought was responsible for this crime. Once participants had generated their own suspect description they were presented with details of two possible suspects.

At this stage (time 1 – pre-profile), participants were asked to estimate the probability for each of the two presented suspects' guilt for the outlined offences. Probability judgments were recorded on a scale ranging from 0% ("absolutely no chance that he is guilty") to 100% ("it is absolutely certain that he is guilty"). Participants were also asked to rate the extent to which each suspect was similar to their description, with ratings recorded on a scale ranging between 0% ("the suspect description is absolutely nothing like my description of the offender") to 100% ("the suspect description is absolutely identical to my description of the offender").

Half the participants were then presented with an orthodox profile and the remaining half saw an unorthodox profile (time 2 – post-profile). All were then asked once more to estimate each of the two suspects' probability of guilt following the same scale. In addition, they were asked to rate the extent to which the profile was similar to their own description of the offender on a scale ranging from 0 (not at all) to 100 (absolutely). Participants were then debriefed and the objectives of the questionnaire were explained.

Materials

The materials were based on Marshall and Alison (2007) and involved a scenario that represented a series of sex offences against children. As Marshall and Alison suggested, this type of offence provides a good opportunity to test for the use of the representativeness heuristic, as expert judgment can be influenced by unfounded stereotypes (see, e.g., Groth, Hobson, & Gary, 1982; Kirby, 1993).

Background Information

Each questionnaire began with a description of the offences and a brief physical description of the assailant as reported by the victims. The offenders' *modus operandi* was then outlined, including the offender's behavior during the assaults, the level of violence involved, and the nature of the sexual acts (see Marshall & Alison, 2007).

Participants Profiling Instructions

Participants were asked to think about the type of person who would commit this crime, based on the information provided.

Suspect Information

Participants were presented with two suspect descriptions. The orthodox suspect (suspect S) was designed to be congruent with the *orthodox* “prototype” child molester described in the literature (Marshall & Alison, 2007). Thus, suspect S was described as a 44-year-old male, unemployed, with only one previous girlfriend. In contrast, the *unorthodox* suspect (suspect A) was designed to be at odds with this, while remaining plausible (although far less likely) in view of the statistics for this kind of offender. Thus, suspect A was described as a socially stable, 26-year-old married male working in a postal sorting office. For both suspects, participants were also told that they had been identified following the broadcast of an E-FIT, they owned a pornography collection, and they lived locally. The physical appearance of both suspects was consistent with the victims’ physical description of the assailant to maintain evidential consistency between suspects. .

Offender Profiles

The two offender profiles were based on a genuine (albeit now outdated) profile, in order to establish face validity of the materials (Marshall & Alison, 2007). The details of the profile consisted of the sorts of attribution and demographic statement in “traditional trait-based profiles” (Alison, McLean, & Almond, 2007), which, although rarely used in contemporary behavioral profiles in the UK, are similar to the sorts of statement in many profiling procedures around the world. For instance, the orthodox profile (S-profile) was designed to be congruent with suspect S’s description and included claims such as “the offender will usually be sexually inexperienced or sexually inadequate”. Further, the unorthodox profile (A-profile) was designed to be congruent with the description of suspect A, including claims such as “the offender will be sexually exploratory”. Both profiles predicted that the offender would live locally and own a pornography collection.

Data Preparation and Analysis

Guilt rating variables were log transformed so that they met parametric assumptions and subjected to ANOVA analyses. Planned comparisons using *t* tests were conducted on significant main effects and interactions; descriptive statistics (mean \pm SD) given in the presentation of planned comparisons refer to the data pre-transformation. If Levene’s test for equality of variances was violated then *t*-test results were confirmed with equivalent non-parametric tests.

We investigated the relationship between guilt ratings of the two suspects at time 1 and time 2, and explored whether guilt ratings at time 2 were mediated by perceived congruence (similarity) between the participants’ initial own description of the offender and the profile description provided by the offender profile (this variable is referred to as “perceived congruence”). Due to our large sample size and the direct association between time 1 and time 2 guilt ratings, we utilized the Sobel test as recommended by Preacher and Hayes (2004). This involves computing the product of the predictor variable on the mediator (*a* path) and the mediator and the outcome variable (*b* path), i.e. *ab*, which is the indirect effect of the predictor on the outcome variable. The Sobel test then compares the *c* path (direct predictor–outcome variable relationship) to the

c' path (the c path after statistically controlling for the indirect effect, i.e. ab). This methodology has far superior statistical power to the commonly used causal steps approach (Baron & Kenny, 1986).

RESULTS

Pre-profile (Time 1)

Analysis of the Main Effects and Interaction Between Suspect Guilt Judgments, Suspect Orthodoxy and Profession

Guilt ratings for the two suspects were analyzed using a mixed design ANOVA, with a within subjects factor of orthodoxy (orthodox, unorthodox) and a between subjects factor of profession (police, non-police). There was no main effect of suspect orthodoxy on guilt ratings, $F(1, 282) = 0.21$, $p > .1$ (i.e. there was no significant difference in the guilt ratings of the orthodox and unorthodox suspects). There was however a strong trend towards a main effect of profession on guilt ratings, $F(1, 282) = 3.45$, $p = .06$, $\eta_p^2 = .102$. To investigate this main effect further guilt ratings for the two suspects were collapsed into a single guilt measure. Planned comparisons using t tests revealed that overall guilt ratings from police participants (3.42 ± 0.23) were significantly higher than non-police participants (3.31 ± 0.42 ; equality of variance not assumed, Levene's test $F = 4.08$, $p = .044$, $t(173.20) = -2.60$, $p = .01$, Mann-Whitney $Z = M2.20$, $p = .028$). This suggests that members of the police force (compared with non-police participants) assigned significantly higher ratings of guilt to the suspects, regardless of suspect orthodoxy. There was no evidence of a two-way interaction between orthodoxy and profession, $F(1, 282) = 0.11$, $p > .1$.

Correlations Between Guilt Ratings and Self-generated Profile

In order to investigate the association between participants' self-generated profiles and guilt judgments for both the orthodox and unorthodox suspects, participants were required to rate how similar their self-generated profile was to the two presented suspects. For the orthodox suspect, there was found to be no significant association between guilt judgments and the degree of similarity to the participants' generated profile, $r = .09$, $p > .1$. There was however, for the unorthodox suspect, a significant positive correlation between guilt ratings and participant self-generated profile similarity, $r = .15$, $p = .012$, (i.e., if participants perceived the unorthodox suspect to be similar to their self-generated profile, then they rated him as more guilty), although this represents a relatively small effect size.

Post-profile: Analysis of the Comparative Guilt Ratings Pre- and Post-profile

Main Effects and Interactions Between Suspect Orthodoxy, Profession and Expert Profile Orthodoxy

Guilt ratings for the suspects were analyzed using a mixed design ANOVA, with within subjects factors of suspect orthodoxy (orthodox, unorthodox) and time (pre-profile,

post-profile), and between subjects factors of profile type (orthodox, unorthodox) and profession (police, non-police). As there was no evidence for main effects or interactions between profession and other variables, this was dropped from the analysis and participants were treated as a single group.

Once more, there was found to be no main effect of suspect orthodoxy on perceived guilt, $F(1, 282) = 0.211$, $p > .1$. There was, however, a significant main effect of time, $F(1, 282) = 9.72$, $p = .001$, $\eta_p^2 = .033$. Comparisons revealed that overall guilt ratings (collapsed across both suspects) declined from time 1 (3.33 ± 0.38) to time 2 (3.26 ± 0.48 ; $t(285) = 3.12$, $p = .002$). As will be explained below, this finding of overall reduced guilt is likely to be because participants significantly reduced ratings of guilt for one participant as they became more certain of guilt in the other due to the impact of the profile (i.e. although guilt judgments for each suspect were adjusted at time 2 relative to the advice of the expert profile, the relative decrease in guilt for one suspect was much larger than the relative increase in guilt for the other). There was found to be no main effect of profile, $F(1, 282) = 2.87$, $p > .1$.

There was a trend towards an interaction between suspect orthodoxy and time, $F(1, 282) = 2.87$, $p = .09$, $\eta_p^2 = .010$, with a significant decrease in guilt ratings for the orthodox suspect between time 1 (1.67 ± 0.25) and time 2 (1.61 ± 0.34 ; $t(285) = 3.12$, $p = .002$). There was no significant change in guilt ratings between times 1 and 2 for the unorthodox suspect, $t(285) = .10$, $p > .1$. Results also indicated a highly significant three-way interaction between suspect orthodoxy, time and profile orthodoxy, $F(1, 282) = 174.81$, $p < .001$, $\eta_p^2 = .383$, (see Figure 1). Planned comparisons revealed that, following the presentation of the *orthodox profile*, guilt ratings for the *orthodox suspect* significantly increased from time 1 (1.68 ± 0.22) to time 2 (1.82 ± 1.55), $t(138) = -7.08$, $p < .001$; whereas guilt ratings for the *unorthodox suspect* significantly decreased from time 1 (1.67 ± 0.25) to time 2 (1.46 ± 0.33), $t(137) = 8.04$, $p < .001$, (Figure 1 Panel 1). A similar pattern was also observed following the presentation of the *unorthodox profile*: guilt ratings for the *unorthodox suspect* significantly increased between time 1 (1.64 ± 0.30) and time 2 (1.84 ± 1.17 ; $t(147) = -7.55$, $p < .001$), whereas guilt ratings for the *orthodox suspect* significantly decreased between time 1 (1.66 ± 0.26) and time 2 (1.41 ± 0.38 ; $t(147) = 8.34$, $p < .001$, Figure 1 Panel 2). In support of Hypothesis 1, these results indicate that the profile had a large effect on participants assigning guilt to the suspects at time 2 (i.e. they altered their guilt judgments to be more in line with the advice of the profile).

Mediation of Perceived Guilt Ratings by Level of Congruence Between Self-Generated and Expert-Generated Profiles

Unorthodox Suspect

In support of Hypothesis 2, the Sobel test found that perceived profile congruence was a significant mediator of the relationship between perceived guilt of the *unorthodox* suspect pre-profile and post-profile, Sobel test $Z = 2.39$, $p = .017$. When controlling for the indirect effect of profile congruence ratings, time 1 guilt ratings were still found to significantly predict time 2 guilt ratings, $B = 0.22$ (SE = 0.07), $p = .002$, (see Figure 2 Panel 1), indicating that profile congruence was a partial, but not full, mediator of the association between perceived guilt pre-profile and perceived guilt post-profile for the unorthodox suspect.

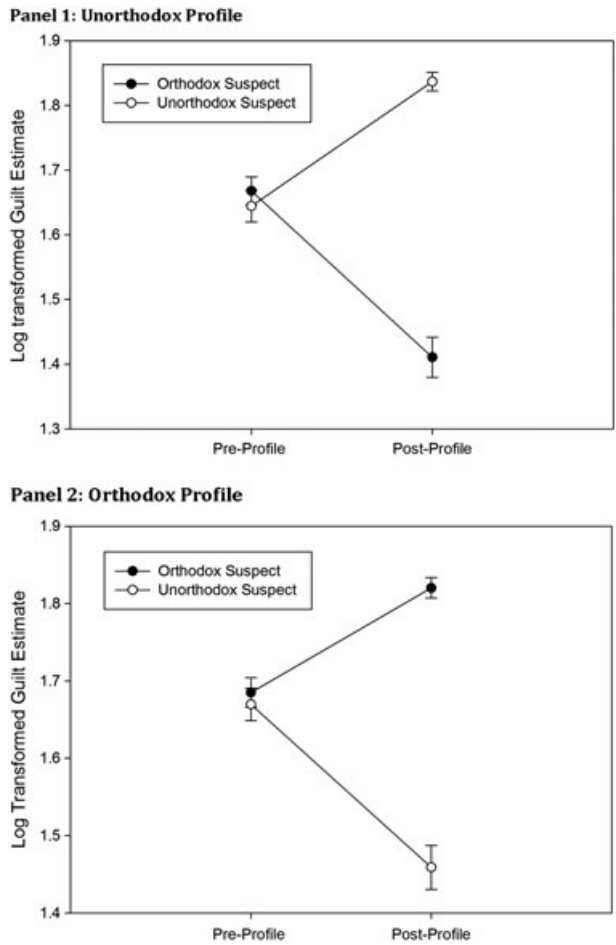


Figure 1. Graphs showing the effect of the profile on perceived guilt of orthodox and unorthodox suspects. Effects shown separately for participants given the unorthodox profile (panel 1) and unorthodox profile (panel 2).

Orthodox Suspect

There was no evidence that perceived profile congruence was a significant mediator of the relationship between time 1 and time 2 guilt ratings of the *orthodox* suspect (Sobel test $Z = 1.40, p > .1$). Perceived congruence (between self-generated and expert-generated profiles) did not significantly predict time 2 guilt ratings, $B = 0.001$ ($SE = 0.001$), $p > .1$, (see Figure 2 Panel 2). This indicates that perceived congruence of the profile is only a significant factor in decision making when assigning guilt to unorthodox suspects.

DISCUSSION

This study examined whether the influence that offender profiles had on judgments of guilt was affected by orthodoxy and congruence. Overall, findings demonstrated some

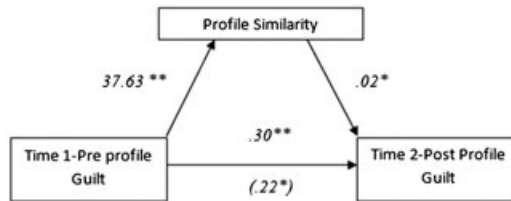
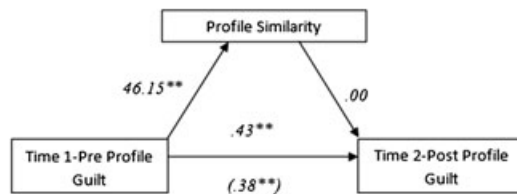
Panel 1: Unorthodox Profile**Panel 2: Orthodox Profile*** $p < .05$, ** $p < .01$

Figure 2. Illustration of the partial mediation of the relationship between perceived guilt at time one (Pre-profile) and perceived guilt at time two (Post-profile) by profile similarity. Unstandardized regression coefficients are reported. The value in brackets refers to the association between time one and time two guilt after similarity ratings were statistically controlled.

potential effects that advice might have on both lay perceptions (and thus potential members of the jury) and police investigators. First, although police perceived suspects to be guiltier than non-police (regardless of orthodoxy), both police and non-police participants were influenced by expert profiles in a similar way. Second, in support of Hypothesis 1, expert profiles had a significant effect on revising previously held perceptions of guilt. Significantly, although expert profiles increased perceptions of guilt in the suspect who fitted the profile, expert advice had a larger impact in decreasing and discounting guilt in the suspect who did not fit the profile. Finally, in support of Hypothesis 2, an interaction effect was found between unorthodoxy and congruence. Thus, when a suspect was unorthodox, the similarity between the expert profile and an individual's beliefs was influential in altering guilt judgments, but had no effect if the suspect was orthodox. The significance of these findings is discussed below.

Advice has Similar Impact on Police and Non-police

Overall, findings showed that initial judgments of suspect guilt prior to the presentation of offender profiles were higher for police than non-police regardless of whether the suspect description was orthodox or unorthodox. This suggests that police officers may be more predisposed to view a suspect as guilty compared with members of the public. It is possible that this predisposition to viewing suspects as guilty may compromise the ability of police to maintain an open mind when evaluating evidence. Findings of confirmation bias research (Lord et al., 1979; Ross & Anderson, 1982) highlight the

potential danger for officers to selectively search for information that confirms their judgment of suspect guilt at the expense of seeking evidence disproving this judgment.

Despite the tendency for police to initially judge suspects as more likely to be guilty than non-police, both groups were influenced by the offender profile in a similar manner. There was no significant difference in the impact of suspect orthodoxy and advice congruence on advice influence between police and non-police. The absence of any significant differences between the non-police and police samples is encouraging, in so far as it suggests that findings from studies conducted with non-police participants may be transferable within this specific domain. Furthermore, it suggests that, within this context, police and non-police use similar cognitive strategies in their interpretation of expert advice. Thus the accumulation of police training and experience does not appear to alter the cognitive strategies officers use to interpret and utilize information presented by expert behavioural advisors.

Offender Profiles Encourage Judgment Revision

Findings supported the notion of an expert heuristic (Chaiken & Maheswaran, 1994), as the introduction of an offender profile had a significant impact on judgments of guilt. Not only did the offender profile either enhance or inhibit the initial beliefs of guilt with regard to both the individual suspects to shift towards agreement with the expert, but the majority of participants also changed their decision as to which suspect was guiltier after receiving a profile that challenged their initial decision. The degree of belief change after receiving a congruent profile was considerably smaller than receiving a profile that challenged their initial decision. In other words, an agreeable profile with one's own beliefs bolstered perceptions of guilt or non-guilt; however, a disagreeable profile had a much larger effect in changing initial perceptions of guilt. It may be that the greater the extent to which the congruent profile re-affirmed participants' pre-conceptions the less they felt they needed to change their initial judgments of guilt. The congruent profile may therefore have reassured participants that their preconceptions were correct so that they did not need to amend their judgments of suspect guilt. Receiving an incongruent profile alternatively led to a far more dramatic change in perceptions of guilt. It may be that a disagreeable profile challenged participants' pre-conceptions more, which encouraged them to reconsider their initial judgments of non-guilt about the expert's favored suspect. The incongruent profile informed participants that their preconceptions were incorrect so that they had to make a greater change to their initial judgment of the congruent suspect's guilt.

The degree of belief change was also influenced by the participants' initial description of the offender. After receiving a congruent profile, the greater the perceived similarity between a suspect and the participants' description of the offender the smaller the degree of belief change in that suspect. It may be that the more a profile confirmed participants' initial preconceptions about a suspect the less change they felt needed to be made to their judgment of that's suspects guilt. On the other hand, after receiving an incongruent profile, the greater the perceived similarity between the incongruent suspect and the participants' description of the offender, the greater the degrees of belief change in the congruent suspect. That is, the more a profile disconfirmed participants initial preconceptions about a suspect the more change they felt needed to be made to their judgment of the congruent suspect's guilt.

The finding that disagreeable profiles produce greater extent of belief change than agreeable profiles can be explained by the influence of the experts. As previously noted, studies of persuasion show that the perceived credibility of the information source is crucial in determining the impact of the opinions offered (Bohner et al., 2002; Sparks & Rapp, 2011). As an offender profile is deemed to have been written by an “informed expert”, this may affect participants’ judgments of guilt. When a profile is congruent with the participants’ initial beliefs there is no need for them to re-evaluate their judgments, as the profile is not telling them anything new. However, when the profile is incongruent, because it is written by an “informed expert”, this persuades the participants that their initial beliefs were incorrect; therefore, they need to re-evaluate their judgments of guilt, resulting in the dramatic changes in beliefs. In support of Priester and Petty (1995) and Klucharev et al. (2008), these findings indicate that source credibility may be used as a peripheral cue or heuristic that affects perceptions of the reliability of a message.

The Interaction Between Orthodoxy and Congruence

In line with Marshall and Alison (2007), participants did not perceive the orthodox suspect as guiltier than the unorthodox suspect. This suggests that individuals do not necessarily hold a common picture of a child sex offender and that there is considerable variation in the extent to which individuals interpret the same suspect information. Rather than judging a suspect’s guilt on the basis of similarity to a stereotype, as predicted by the representativeness heuristic, findings illustrated that guilt was judged on the degree of similarity between participants’ initial description of the type of offender who would have committed this crime and suspect descriptions, regardless of whether the suspect was orthodox or unorthodox. Thus, in order to understand the impact of representativeness on advice influence it is important to identify an individual’s personal perceptions of what constitutes an “orthodox” child sex offender, as this may differ from the stereotypical view.

In line with expectations, offender profiles had a greater influence over guilt judgments for the unorthodox rather than the orthodox suspect. Furthermore, when judging guilt of the unorthodox suspect, the level of similarity between the offender profile and the description of the suspect was a significant mediator of advice impact on guilt judgments. These findings support the suggestion that social and representativeness heuristics affect decision makers’ judgments of advice reliability. In line with Davison’s (1983) third person effect, it may be that unorthodox expert advice was believed to have a stronger effect on other people and therefore participants felt that they must adjust their own opinions to fall in line with the status quo. In terms of the expert heuristic, unorthodox expert advice may be especially influential as individuals assume that the communication must be credible, accurate and trustworthy. If the individual feels ill equipped to make an independent judgement then they may rely on expert credibility and therefore perceive an unorthodox communication unquestioningly as new information rather than contradicting.

These findings also support the suggestion by McKimmie et al. (2003) that perceptions of social support play an influential role in determining the extent that individuals become reliant on the advice of an expert. Accordingly, by virtue of being unorthodox, participants may perceive guilt judgments for the unorthodox suspect to receive less social support and so may feel that they require greater support from the expert. Consequently,

offender profiles may have a greater influence on guilt judgments for the unorthodox suspect because individuals would seek to share responsibility for this judgment with the expert in lieu of the lack of social support.

It is also possible that part of what influenced participants in this specific domain may relate to the “unobviousness” of the unorthodox suspect and the “expert’s” “ability” to spot this. Thus, the reason the more (statistically) likely orthodox expert view held less influence was that it was too obvious/easy for the participant to “figure out” themselves, whereas the features that, superficially, looked unlikely (educated, married with children) could be re interpreted. This process of reinterpretation may have led to mistrust of the conventional “orthodox” stimuli and, thus greater readiness to construct narratively complex explanations for motive etc. in the unorthodox suspect. The process by which individuals make sense of ambiguous information has been discussed in some detail by Alison and Rainbow (2011), and seems to overlap with Forer’s (1949) early studies on the so called “Barnum effect”, where individuals will create perspectives and viewpoints based on ambiguous and very general statements. This may be particularly pronounced when what look like unthreatening and unlikely background suspect characteristics are re interpreted, thus leading to a preference for a more intricate unorthodox explanation.

However, these are only suggestions with little direct experimental support. Thus, this paper proposes that research into the influence of unorthodox advice as a persuasive tool is in extreme need. The consequences of unorthodox advice swaying public opinion can have dramatic and devastating effects, and thus it is paramount to ensure that the mechanisms behind this process are fully understood in order to ensure that decisions are based on sound, theoretical protocols rather than scaremongering and mass hysteria.

Limitations and Future Research

One limitation of the present study is that it was conducted in an artificial online environment. Therefore, the extent to which findings are transferable is questionable. However, we have conducted a number of interviews with senior investigating officers and behavioral investigative advisors to discuss these decision making biases in greater detail. These individuals provided responses that indicate that these biases do sometimes occur during an investigation and that they can, if care is not taken, hinder a criminal investigation. During his 15 years as a police advisor, the first author has experienced first-hand many of the issues highlighted in this study. Future research would track real investigations to examine how the introduction of an offender profile affected the senior investigating officers’ decision making in real time.

Additionally, the likelihood of utilizing heuristic cues is dependent on the level of motivation and ability of an individual to evaluate a message and as such it is reasonable to argue that this simple task does not replicate the complexity and high levels of motivation that would be involved in a real enquiry (Alison, Barrett, & Crego, 2007). Chaiken (1987) argues that when individuals are highly motivated towards a message they are more likely to engage with it systematically and thus reduce their use of heuristic cues, although when the ability to evaluate a message is reduced, for example because of complexity (Payne, 1976) or time constraints (Kruglanski & Thompson, 1999), the tendency re-emerges. In some cases investigators have to make rapid decisions or decisions with far greater complexity than is involved in the current study – as such, the counter-argument would be that in ‘real cases’ investigators may be more prone to reliance on heuristics.

Implications

This paper has illustrated the significant impact that offender profiles have on judgments of guilt. This may not be problematic if a profile is empirically sound but, given that some profiles contain redundant, unsubstantiated and ambiguous information that may have a negative impact on an investigation (Alison et al., 2003), officers should be cautious about the extent to which they allow expert advice to influence their judgments. Likewise, expert advisers should take heed of the ethical concerns surrounding transparency in advice giving by acknowledging and responding to the potentially powerful influential effects of their advice. The trial of Colin Stagg in the United Kingdom is a stark example of how dangerous inappropriate and unclear profiling can be, leading a police investigation in entirely the wrong direction. In this case an offender profile led to the identification of Colin Stagg as the primary suspect in the apparently sexually related murder of a young woman in one of London's public parks. Other than the profile, there was no compelling evidence against Stagg and other, possibly more compelling, suspects were not focused on with the same verve. The subsequent prosecution of Stagg was thrown out of court at the earliest stages of trial, with the Judge, Justice Ognall, severely criticizing the use of "profiling" in the investigation (Canter & Alison, 1999).

Whilst improvements have been made to offender profiles within the United Kingdom (Almond, Alison, & Porter, 2007), the extent to which such improvements have been made within other countries is unknown at present. It is consequently all the more important for police to be vigilant and adopt healthy skepticism in appraising advice. The finding that police are subject to similar heuristics and biases when evaluating and utilizing expert advice suggests that officers require specific training tailored toward these issues and warning about the dangers associated with being unduly influenced by advice that has not been subjected to scrutiny. Indeed, any organization that creates and utilizes expert advice as part of their decision making processes should consider training employees against the pitfalls of allowing simplifying cognitive strategies, such as the expertise heuristic as identified within this study, to unduly influence their judgments. Furthermore, Saviers (2002) advises that experts themselves also need to be explicit when providing such forensic advice by making recipients aware of the potential of error and limitations of their expertise. Therefore, not only can police be trained in optimizing the use of expert advice, but experts can further improve their advice by taking an ethical approach to their limitations.

Overall, offender profilers and advisors in general should ensure that when giving advice they provide substantial caveats around its use and evidential strength. As Alison, West, and Goodwill (2004) note, offender profilers should not assume that police officers interpreting their advice will know what the process, methodology, or scientific underpinnings of profiling consist of. Profilers should therefore construct transparent reports that provide an account of the factors that influenced their opinions and the scientific principles that they used, as well as the limitations of their methodology. Profilers should also outline the expectations that the officers had before the profiler began, as well as documenting how the profile was utilized by the police. This will benefit the enquiry, provide better evaluation of the service, and also serve to protect the profiler (Alison et al., 2004). The same conclusions are also applicable to advisors across different domains.

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