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Exploring the Decision Component of Activation-Decision-Construction-Action Theory for Different Reasons to Deceive

Hannah Cassidy¹, Joshua Wyman², Victoria Talwar², Lucy Akehurst³

¹ University of Brighton, UK

² McGill University, Quebec, Canada

³ University of Portsmouth, UK

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Abstract

Purpose: To explore how reasons to lie impact upon the Decision component of Activation-Decision-Construction-Action Theory. Specifically, the study looked at how beneficiary of the lie (self vs. another) and additional cost of lying (no cost vs. cost to self/other) might influence decisions to lie.

Method: Ninety-one undergraduate students read four hypothetical scenarios representing the four reasons to lie. They stated whether they would decide to tell the truth/lie for each scenario and also estimated the probability and valence of being believed, or not, if they did decide to tell the truth/lie. These estimations were inputted into the ADCAT formulae.

Results: Higher expected values of truth-telling only reduced likelihood to decide to lie when the lie benefitted another. The beneficiary of the lie and additional cost did not moderate any of the relationships between the ADCAT variables and hypothetical decisions to lie. However, additional cost (e.g., cost to self or another) was a significant predictor of anticipated lying behaviour. The more likely there was a cost to self or other, the less likely the participants were to decide to lie.

Conclusions: Weighing up the expected cost and benefits of truth-telling and lying was associated with hypothetical decisions to lie or not. However, other variables, such as additional cost to self or another, should be considered in the ADCAT model to extend our understanding of this decision-making process. Future research is required to investigate whether these relationships can be manipulated to promote honesty and deter deceit.

Keywords: adult deception, ADCAT model, decision-making, antisocial lies, prosocial lies

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46 Exploring the Decision Component of Activation-Decision-Construction-Action

47 Theory for Different Reasons to Deceive

48 To deceive or not to deceive, that is the question. Deception is defined as “a
49 successful or unsuccessful deliberate attempt, without forewarning, to create in another a
50 belief which the communicator considers to be untrue” (Vrij, 2008, p. 15). Deception can
51 take many different forms, from outright lies that involve complete fabrications (Vrij, 2008)
52 to embedded lies that incorporate truthful information to create the lie (Vrij, Granhag &
53 Porter, 2010) to deception through the omission of truthful information (Lyon, Malloy, Quas
54 & Talwar, 2008). Most theories and models of deception focus on the emotional and
55 cognitive processes involved in telling a successful lie itself (e.g., Interpersonal Deception
56 Theory, Buller & Burgoon, 1996; Working Memory Model, Sporer, 2016; Cognitive Lie
57 Detection, Vrij, Granhag, Mann & Leal, 2011), leading to new interview techniques to
58 improve lie detection. However, understanding the processes behind deciding to tell the truth
59 or a lie in the first place would perhaps enable us to design better strategies to reduce, or even
60 eliminate, deception in investigative interviews.

61 Based on the Rational Choice Theory (i.e., a general approach to understanding social
62 decision-making), Activation-Decision-Construction-Action-Theory (ADCAT, Walczyk,
63 Harris, Duck & Mulay, 2014) has adapted cost-benefit formulae put forward by Stanovich
64 (2010) to reflect quasi-rational decision-making. Providing a comprehensive framework that
65 maps deception from start to finish, ADCAT is the only cognitive model of deception to
66 isolate the Decision component and provide calculable formulae for predicting truth/lie
67 decision-making. Walczyk et al. (2014) explain that this decision-making process is only
68 quasi-rational because actual likelihoods and costs/benefits are unknown. This means that
69 only estimates of these outcomes are used to evaluate options and to come to a final decision
70 that best optimises goal attainment. In line with Truth-Default Theory (Levine, 2014),

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71 ADCAT assumes that people will deceive as little as possible to achieve their goals (Walczyk
72 et al., 2014). However, this infers that, sometimes, deception will be necessary for goal
73 attainment.

74 When applied to deception, the cost-benefit calculations of the ADCAT model
75 (Walczyk et al., 2014) can be broken down into three steps. First, the expected value of truth-
76 telling is calculated by multiplying the probability and valence of truth-telling and being
77 believed, multiplying the probability of truth-telling and not being believed, and then adding
78 these values together. Second, the expected value of lying is calculated using the same
79 formula, except that ratings relate to telling a lie and being believed, or not. For calculating
80 both expected values (EV), the formula is: $EV_{\text{truth/lie}} = (p_{\text{believed}} \times v_{\text{believed}}) + (p_{\text{not_believed}} \times$
81 $v_{\text{not_believed}})$. Third, motivation to lie is calculated by subtracting the expected value of truth-
82 telling from the expected value of lying: $M = EV_{\text{lie}} - EV_{\text{truth}}$ (see Supplementary Materials for
83 an example of these calculations). Based on these formulae, Walczyk et al. (2014) predicted
84 that (1) expected value of truth-telling would negatively correlate with decision to lie, and (2)
85 motivation to lie would positively correlate with the decision to lie. This theory, therefore, is
86 designed to predict truth/lie behaviours.

87 Due to the novelty of ADCAT, there are very few published studies that have
88 employed this model. In fact, only two studies (Masip, Blandón-Gitlin, de la Riva & Herrero,
89 2016; Walczyk, Tcholakian, Newman & Duck, 2016) to date have tested the Decision
90 component and its formulae. First, Masip et al. (2016) used hypothetical scenarios typical for
91 an undergraduate population (e.g., a friend cheating on a test or witnessing a theft). They
92 found that the expected value of truth-telling was negatively correlated with deciding to lie
93 and that motivation to lie was positively correlated with deciding to lie. Thus, both of
94 Walczyk et al.'s (2014) predictions were supported. However, their findings showed no
95 relationship between the expected value of lying and deciding to lie. Second, Walczyk et al.

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96 (2016) investigated impromptu decisions to lie when asked embarrassing questions during a
97 mock job interview. They also found that the expected value of truth-telling was negatively
98 correlated with deciding and actually telling a lie in the interview. Contrary to Masip et al.
99 (2016), they did find a positive relationship between the expected value of lying and actual
100 lying behaviour. Together the studies present mixed findings, with more testing required to
101 understand whether the expected value of lying, in particular, is related to a decision to lie or
102 not.

103 Building on this previous research, we explored whether reasons to lie might
104 influence decisions to lie or tell the truth. As proposed by ADCAT, reasons for lying can
105 largely depend on the perceived benefits and costs of that lie (Walczyk et al., 2014; Walczyk
106 et al., 2016). The beneficiary of the lie (self or other) and the protection from harm (i.e., cost)
107 that the lie affords the beneficiary are important motives (Vrij, 2007; 2008). Self-oriented
108 lies, also known as ‘antisocial’ or ‘self-serving’ lies, are largely discouraged because they
109 primarily serve to protect the liar (Hsieh, 2004). For example, an antisocial lie might include
110 falsely telling your lecturer that your grandparent has passed away to be able to re-sit an
111 exam. Other-oriented lies, also referred to as ‘prosocial’ or ‘polite’ lies, are perceived to be
112 more socially tolerable than self-oriented lies because they aim to benefit others (Backbier,
113 Hoogstraten & Terwogt-Kouwenhoven, 1997; DePaulo, Kashy, Kirkendol, Wyer & Epstein,
114 1996; Dunbar et al., 2016). This preference for prosocial lies has also been found cross-
115 culturally (Seiter, Bruschke & Bai, 2002). An example of an other-oriented lie is receiving an
116 undesirable gift (e.g., an unattractive shirt) from a dear relative and feigning delight at
117 receiving such a gift so as not to offend the gift-giver. When deciding on the acceptability of
118 lying and truth-telling in a given situation, adults appear to use a model of practical
119 reasoning, whereby they adapt their reasoning to suit the needs of that situation (Lavoie,
120 Leduc, Crossman & Talwar, 2016, O’Neill, 2007). If there is a need to protect a dear relative

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121 from becoming upset, then an other-oriented lie might be acceptable. This could explain why
122 the most frequent form of lies are other-oriented, aimed at protecting someone else from
123 harm (Serota & Levine, 2015). A preference for other-oriented lying could, therefore, be due
124 to weighing up the benefits of resolving the need against the costs of not protecting another
125 from harm.

126 Truth-telling and lying could also involve an additional cost to the self or another.
127 Self-oriented lies could involve placing the blame on someone else (e.g., saying that a
128 younger sibling broke the family heirloom, when, in fact, it was oneself). Additionally, other-
129 oriented lies could involve placing the blame on oneself (e.g., the deceiver falsely admitting
130 guilt for breaking the family heirloom when, in fact, it was his/her younger sibling). The
131 perception of potential harm is a strong predictor of moral judgments, with immoral acts
132 being linked to suffering (Gray & Schein, 2016; Gray, Young & Waytz, 2012). A primary
133 function of these judgments is to guide practical reasoning (Cushman & Young, 2009) so that
134 in the case of self-oriented lies, with a cost to another, the need of the older sibling must
135 significantly outweigh the suffering of the younger sibling to warrant deception. Other-
136 oriented lies, with a cost to self, present a different situation. Here, the self-sacrifice of the
137 older sibling to protect the younger sibling would constitute altruism. Evolutionary
138 psychologists theorise that altruism is a key motivator for prosocial behaviour that has
139 evolved through natural selection, resulting in generations with more empathic concern
140 (Berk, 2013). This could explain why the more the deception becomes altruistically-
141 motivated, the more the deception is rated as acceptable (Seiter et al., 2002). Metaphorically,
142 falling on one's sword would, therefore, be preferable to stabbing someone else.

143 Our aims were, therefore, not only to further test the predicted relationships within the
144 Decision component of the ADCAT model but also to add to this literature by exploring how
145 these relationships might be influenced by different reasons to lie. We firstly hypothesised

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146 that expected value of truth-telling would negatively correlate with the decision to lie. Our
147 second hypothesis was that the expected value of lying would positively correlate with the
148 decision to lie. Thirdly, we predicted that motivation to lie would also negatively correlate
149 with the decision to lie. Finally, being the first study to look at the Decision component of
150 ADCAT for different reasons to lie, we proposed some explorative tests. We expected three-
151 way interactions in that beneficiary of the lie and an additional cost would moderate the
152 relationships between the expected value of truth-telling and decision to lie and the expected
153 value of lying and decision to lie. In particular, we predicted that when the beneficiary of the
154 lie was oneself, an additional cost to an ‘innocent’ other was at stake, and, thus, the expected
155 value of truth-telling was high, then the participant would be most likely to decide not to lie.
156 We also predicted that when the beneficiary of the lie was another, an additional cost to
157 oneself demonstrating one’s altruism was at stake, and, thus, the expected value of lying was
158 expected to be higher, then the participant would be most likely to decide to lie.

159 In addition to the expected theoretical implications of analysing the Decision
160 component of ADCAT, there are also potential practical implications as well. In investigative
161 interviews, where the veracity of interviewees’ accounts can strongly influence the outcome
162 of the case (Berman, Narby, & Cutler, 1995), researchers have been keen to investigate
163 strategies to promote honest disclosure and to deter deceit (see Rosenbaum, Billinger, &
164 Stieglitz, 2014 for a review). However, depending on interviewees’ motivations for lying
165 (i.e., if the lie will protect another from harm), they might still be inclined to provide a false
166 report. For instance, in cases of maltreatment, victims often report that a barrier to disclosure
167 is that they do not want to get the abuser into trouble (Beaulaurier, Seff, Newman, & Dunlop,
168 2006; Lemaigre, Taylor & Gittoes, 2017). In these situations, it is important to know how
169 different reasons to lie will influence cost-benefit calculations and, ultimately, final decisions
170 to be honest or not.

171 **Method**172 **Design**

173 A within-subjects design was used, with reason to lie as the independent variable.
174 Reason to lie was split by the beneficiary of the lie (self vs. another), and the presence of
175 additional cost of lying (no cost (i.e., neutral) vs. cost to self/other). This resulted in four
176 'reasons to lie' conditions: (1) Self-oriented with no cost to another (Self-Neutral), (2) Self-
177 oriented with a cost to another (Self-Cost), (3) Other-oriented with no cost to self (Other-
178 Neutral), and (4) Other-oriented with a cost to self (Other-Cost). The dependent measures
179 were dichotomous decisions to lie or tell the truth and Likert scale ratings of the probability
180 and valence of outcomes for truth-telling and lying for each reason to lie.

181 **Participants**

182 Ninety-one first year undergraduate students (18 males), with an average age of 18.56
183 years ($SD = 1.47$ years), were recruited to participate in this study. They took part in a lab
184 induction exercise and did not receive credit for their participation. In terms of ethnicity, 61
185 identified as White/Caucasian (67%), 12 as Asian (13.2%), 8 as Multiple/Mixed ethnic group
186 (8.8%), 7 as Black/African/Caribbean (7.7%), 1 as 'Other ethnic group' (1.1%), and 2 did not
187 specify their ethnicity (2.2%).

188 **Materials**

189 **Hypothetical scenarios.** The four hypothetical scenarios were all set in an academic
190 context and included situations in which undergraduate students might find themselves
191 (similar to Masip et al., 2016). There were two scenarios where self-oriented lies could be
192 told, and two where other-oriented lies could be told. These scenarios were then further split
193 to manipulate the presence of an additional cost (i.e., harm) as introduced by Talwar,
194 Williams, Renaud, Arruda, and Saykaly (2016). See the Supplementary Materials for the full
195 scenarios. Prior to testing, the scenarios were piloted. The pilot exercise (with 14

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196 participants) was undertaken to avoid issues of significantly uneven frequencies between
197 decisions to lie and tell the truth, which resulted in Masip and colleagues (2016) having to
198 withdraw numerous scenarios from their study. As a result of the pilot study, certain changes
199 were made. Namely, the presentation of the probability rating scale was changed from
200 decimal points (e.g., .5, .8), as used in Masip et al. (2016), to percentages (e.g., 50%, 80%) to
201 aid responder comprehension. Furthermore, the self-oriented lie with no cost to self was
202 considered to be too implausible, and so this was changed from a USB stick falling through a
203 hole in a pocket and being kicked down a drain to a student misremembering a deadline and
204 forgetting to put their phone on to charge, so the alarm did not go off.

205 **Post-scenario questionnaire.** The post-scenario questionnaire (see Appendix) firstly
206 asked participants to make an initial decision to tell the truth or lie in the recently presented
207 hypothetical scenario. The order of the truth/lie option was counterbalanced. Participants
208 were then required to evaluate the anticipated outcomes of being believed/not believed and
209 the probability of being believed/not believed, using a scale from 0% (will not happen) to
210 100% (will certainly happen), and the desirability (i.e., valence) of the anticipated outcomes,
211 using a scale from -5 (extremely undesirable) to +5 (extremely desirable) for both truth-
212 telling and lying for that particular scenario. This mirrored the rating scales used by Masip et
213 al. (2016). From these ratings, the expected value of truth-telling, the expected value of lying,
214 and motivation to lie could be calculated using the ADCAT formulae noted above and
215 included in the Supplementary Materials. The order of appraisal for telling the truth and
216 telling a lie was counterbalanced – that is, half of the sample evaluated the outcomes of
217 telling the truth first, and the other half evaluated the outcomes of telling a lie first. Finally,
218 participants were asked to make a final decision to tell the truth or lie based on their
219 evaluations. The order of the truth/lie option mirrored the order of the truth/lie option for
220 their initial decision. Changes from the initial decision to the final decision were coded.

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221 **Procedure**

222 The study lasted approximately 30 minutes. In groups of eight to fifteen students,
223 participants watched the four hypothetical scenarios via a Microsoft PowerPoint slideshow on
224 a screen projection. Text and images were presented on the slides, with the text also being
225 read aloud. The order of the scenarios was counterbalanced so that each vignette was never
226 preceded nor followed by the same scenario more than once. Immediately after watching
227 each scenario, participants completed the post-scenario questionnaire (one questionnaire per
228 scenario). To encourage impromptu decision-making, participants were encouraged to
229 respond quickly and instinctively. Participants were also instructed not to confer with their
230 fellow participants; the research assistant was always present in the room to ensure that there
231 was no conferring. Following the fourth vignette, participants were invited to complete a
232 questionnaire that asked for age, gender and ethnicity.

233

Results

234 Chi-squared testing was used to investigate differences in frequency between truth-
235 telling and lying across the four scenarios, point-biserial correlations were used to investigate
236 relationships between ADCAT variables and expected decisions to lie or tell the truth, and
237 multiple regression analyses were used to explore the moderating effects of the beneficiary of
238 the lie and additional cost of lying. Preliminary analyses revealed no effects for any of the
239 demographic variables, group session or order of presentation of scenarios on the statistical
240 testing. Post-hoc power tests were performed using G*Power (Faul, Erdfelder, Lang &
241 Buchner, 2007) to analyse sensitivity based on a sample of 91 participants, an alpha level of
242 .05 and satisfactory power level of 80%. Results showed that, for the point-biserial
243 correlations, the sample size was sufficient to find effect sizes of .25 and above, and for
244 multiple regressions, the sample size was sufficient to find effect sizes of .07 and above. This

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245 suggests that there is a minor risk of Type II error for small effect sizes ($< .25$) for the point-
246 biserial correlations.

247 **Frequency of lying**

248 Table 1 displays the percentage of participants that made an initial and final decision
249 to tell the truth or lie across the four scenarios. Participants indicated that they would lie
250 significantly more than tell the truth for the self-oriented lie with no cost to another;
251 conversely, they expected to tell the truth significantly more than lie for the self-oriented lie
252 that incurred a cost to someone else. For other-oriented lies, the only difference in
253 expectations for truth-telling and lying was when the lie had no cost to self. In this scenario,
254 participants initially expected to lie significantly more than tell the truth; however, this
255 difference became non-significant for final decisions for this scenario. This is most likely due
256 to more participants changing their response from lie to truth than from truth to lie once they
257 had evaluated truth/lying for that scenario, $X^2(1) = 4.46, p = .04$. For the other three
258 scenarios, changes in expected truth-telling/lying were equally distributed (p -values $>.05$).

259 Based on the recommendations of Masip et al. (2016), we analysed the frequency of
260 truth/lie response and the absolute difference in percentage between truth/lie decisions
261 because the split of binomial variables can affect point-biserial correlations. Masip et al.
262 (2016) explained that small frequencies can often lack representativeness of the population
263 due to outliers potentially distorting the results. Furthermore, they cite that Kemery, Dunlap,
264 and Griffeth (1988) reported that variance could be restricted by uneven proportions in
265 dichotomous variables, which can, in turn, underestimate correlations. Using the inclusion
266 criteria suggested by Masip et al. (2016), we kept all scenarios where the frequency of truth-
267 telling/lying was above 10, and the absolute difference in percentage between truth/lie
268 decisions was smaller than 75%. All four scenarios complied with both of these inclusion
269 criteria.

270 ADCAT variables

271 Point-biserial correlations (r_{pb}) were used to examine the relationships between the
272 ADCAT variables (expected value of truth-telling, the expected value of lying, and
273 motivation to lie) and participants' expected decision to lie (1) or tell the truth (0) across the
274 four reasons to lie. This is in line with previous studies that have tested the *Decision*
275 component of the ADCAT model (Masip et al., 2016; Walczyk et al., 2016). The descriptive
276 statistics (means and standard deviations) for each of the ADCAT variables, as well as the
277 point-biserial correlations between the ADCAT variables and the initial and final decision to
278 tell a lie, are displayed in Table 2. All significant relationships between the ADCAT variables
279 and expected decision to lie were in the predicted direction. Contrary to our predictions, the
280 expected value of truth-telling was not related to a decision to lie for either of the self-
281 oriented lies (p -values $>.05$).

282 Explorative testing

283 We performed hierarchical multiple regression analyses to determine the effect of
284 expected values of truth-telling and lying, the beneficiary of the lie, additional cost and the
285 interaction between these variables on the initial and final hypothetical decisions to lie (i.e.,
286 the outcome variables). Accordingly, the expected value of truth-telling and the expected
287 value of lying were entered as predictors at step 1, beneficiary of the lie (self-oriented = 0, vs.
288 other-oriented = 1) and the additional cost of lying (no cost (i.e., neutral) = 0, vs. cost to
289 self/other = 1) were dummy-coded and entered as moderators at step 2, and the interactions
290 between each expected value and each moderator separately, and then each expected value
291 and both moderators, were entered at step 3.

292 As can be seen in Table 3, at step 1, both expected value of truth-telling and expected
293 value of lying contributed to the prediction of participants' hypothetical decisions to lie, both
294 initially, $F(2, 361) = 27.94, p < .001, R^2 = .13$, and finally, $F(2, 361) = 19.26, p < .001, R^2 = .10$.

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295 Entering beneficiary of the lie and presence of additional cost did result in significant models
296 for predicting both initial, $F(4, 359) = 19.30, p < .001, R^2 = .18$, and final, $F(4, 359) = 13.90,$
297 $p < .001, R^2 = .13$, hypothetical decisions to lie. The inclusion of these variables significantly
298 increased the amount of variance explained by both models (initial = $\Delta F(2, 359) = 9.37,$
299 $p < .001, \Delta R^2 = .04$. final = $\Delta F(2, 359) = 7.81, p < .001, \Delta R^2 = .04$). However, as Table 3 shows,
300 only additional cost was a significant predictor of both initial ($\beta = -.20, p < .001$) and final ($\beta =$
301 $-.20, p < .001$) hypothetical decisions to lie. The negative correlations suggesting that the
302 presence of an additional cost to self/other decreased the likelihood of a hypothetical decision
303 to lie in the given scenario. The interaction variables entered at step 3 did result in significant
304 models for predicting both initial, $F(10, 353) = 8.28, p < .001, R^2 = .19$, and final, $F(10, 353) =$
305 $7.48, p < .001, R^2 = .18$, hypothetical decisions to lie. The inclusion of these variables
306 significantly increased the amount of variance explained for final decision to lie, $\Delta F(6, 353)$
307 $= 2.91, p = .009, \Delta R^2 = .04$, but not for initial decision to lie, $\Delta F(6, 353) = .95, p = .46, \Delta R^2 =$
308 $.01$. At step 3, however, the only significant predictors for final decision to lie were the
309 expected value of lying ($\beta = .09, p < .001$) and presence of additional cost ($\beta = -.21, p = .002$).
310 When the expected value of lying was higher, then there was a greater likelihood that the
311 participant would decide to lie in the given scenario. Again, when there was an additional
312 cost to self/other present, then there was a smaller likelihood that the participant would
313 decide to lie in that hypothetical scenario.

314 **Discussion**

315 Using the Decision formulae of the ADCAT model, the current study replicated
316 previous research on whether deciding to tell the truth or a lie in a hypothetical scenario is
317 related to the expected costs and benefits of truth-telling and lying. It was also the first study
318 to look at how reason to lie can affect this decision-making process. In support of Walczyk et
319 al. (2016) and Masip et al. (2016), positive associations were found between calculated

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320 motivation to lie and expecting to decide to lie. Additionally, we found a positive relationship
321 between the expected value of lying and deciding to lie, in line with Walczyk et al. (2016),
322 but contrary to Masip et al. (2016). We also found that a negative relationship between the
323 expected value of truth-telling and expecting to decide to lie only occurred when the lie was
324 other-oriented. This is contrary to both of the previous studies that found this relationship in
325 scenarios where the lies were predominantly self-oriented.

326 A significant correlation for both prosocial lies suggests that Walczyk et al.'s (2014)
327 overarching hypothesis of a negative relationship between the expected value of truth-telling
328 and deciding to lie depends on who the lie benefits. In the context of prosocial lies where
329 there is the intention to act for the benefit of another (Dunbar et al., 2016; Lavoie et al.,
330 2016), it can be concluded that if a person decides to tell the truth, then another will primarily
331 suffer the consequences. The cost to another, therefore, forms the basis for calculating the
332 expected value of truth-telling for prosocial lies and would explain why it is particularly
333 important to consider in the decision-making process. On the other hand, no significant
334 relationship for self-oriented lies could be due to a Type II error, or that the primary victim of
335 deciding to tell the truth when presented with an opportunity to tell an antisocial lie is
336 oneself. The findings of the current study suggest that the primary cost to another is
337 considered more important than the primary cost to self when evaluating the cost and benefits
338 of truth-telling.

339 Our exploration of the effects of reason to lie on the truth-telling/lying decision-
340 making process revealed neither beneficiary of the lie nor the additional cost of lying
341 moderated the relationships between the expected values of truth-telling and lying and
342 hypothetical decisions to tell a lie both initially and finally. That said, the additional cost was
343 found to be a significant predictor in the second and third models for both initial and final
344 decisions to lie. When the additional cost of lying was present (i.e., lying by blaming their

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345 fellow student, or lying and taking the blame for their fellow student), participants were less
346 likely to decide to lie. In terms of frequency, this resulted in a significant preference for
347 telling the truth for self-oriented lies, with a cost to another, but no preference for truth-telling
348 or lying for other-oriented lies, with a cost to self. Our initial prediction of a differential
349 response to additional cost, based on whether it was to another at the benefit of the self or if it
350 was to oneself at the benefit of another, was not supported. Indeed, our participants did not
351 show a preference for expecting to act altruistically. Even though altruistic lies are considered
352 to be more acceptable (Seiter et al., 2002), it could be that the need to protect someone else
353 did not outweigh the suffering that the self would incur through the deception. That said, one
354 could argue that a certain level of altruism is shown in the clear preference for telling the
355 truth when the lie would protect the self to the detriment of another person. In this scenario,
356 the participant is incurring a cost to themselves in order to protect another from potential
357 harm.

358 **Theoretical implications**

359 Our findings provide further support for the formulae in the Decision component of
360 Activation-Decision-Construction-Action theory (ADCAT, Walczyk et al., 2014). The results
361 also showed that additional cost to self or another should be considered as an external
362 variable that can predict the expected value of lying and motivation to lie. However, more
363 qualitative research is required to provide a more in-depth understanding of how outcomes of
364 truth-telling and lying are perceived as benefits and costs, and whether these benefits and
365 costs are psychological or materialistic (Vrij, 2008). This might further highlight the quasi-
366 rational decision-making process that underpins ADCAT (Walczyk et al., 2014). There are
367 many other rational, or perhaps irrational, factors that might influence expected values of
368 truth-telling/lying and, ultimately, decisions to lie. Indeed, individual factors, such as
369 confidence in lying ability (Vrij, 2008), propensity to lie (Serota & Levine, 2015), and

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370 fantasy proneness (Merckelbach, 2004) could affect these calculations, as well as contextual
371 factors, such as who the lie is told to (Buller & Burgoon, 1996). Furthermore, participants'
372 strategies for telling a convincing lie may have differed affecting their confidence in telling a
373 lie and being believed.

374 **Practical applications**

375 The current findings demonstrated the complex thought process involved in truth/lie
376 decision-making. In particular, the perceived benefits and costs of a decision to oneself and
377 others were associated with participants' truth/lie decision-making. For other-oriented lies,
378 the suggestion would be that increasing the expected value of truth-telling and decreasing the
379 expected value of lying could result in less motivation to tell a lie. For self-oriented lies, the
380 suggestion would be to only focus on decreasing the value of lying to deter motivation to
381 deceive. Whether these suggestions actually promote honesty and deter deception requires
382 further testing. Developmental research on child deception has found that methods for
383 increasing the value of telling the truth significantly increase children's willingness to
384 truthfully disclose transgressions. These methods include: (1) having the eyewitness promise
385 to tell the truth (e.g., Evans & Lee, 2010; Talwar, Lee, Bala & Lindsay, 2002); (2) reducing
386 any of the perceived negative consequences of truth-telling (Talwar, Arruda, & Yachison,
387 2015); and (3) information or stories that highlight the benefits of honesty (e.g., Lee et al.,
388 2014; Talwar, Yachison & Leduc, 2016). To date, research into the Decision component of
389 ADCAT has shown cost-benefits calculations are related to adults' decision-making for (1)
390 minor transgressions (Masip et al., 2016), (2) mock job interviews (Walczyk et al., 2016),
391 and (3) academic transgressions (the current study) using predominantly undergraduate
392 samples. Before these techniques can be used by police investigators to promote true and
393 deter false eyewitness accounts, more research is required to understand whether these
394 relationships can be manipulated to change truth-telling/lying behaviour in adults, whether

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395 this applies to a more general population, and whether the ADCAT variables relate to
396 decisions regarding more serious and high-stakes lies.

397 **Methodological considerations**

398 Akin to previous studies that have investigated the frequency of deceptive behaviour
399 (Argo, White & Dahl, 2006), the current study used hypothetical scenarios. The limitation of
400 this method is that there is no certainty that participants will respond truthfully about their
401 willingness to deceive. It could also be that a decision to deceive might not translate into
402 actual lying if they found themselves in the situation. Walczyk et al. (2016) resolved this
403 issue by asking participants in their study to actually lie on the spot during mock job
404 interviews. This study showed that the relationship between ADCAT variables and actual
405 truth-telling/lying behaviour did exist. Other studies have demonstrated how hypothetical
406 scenarios of dishonesty can be translated into real tasks (e.g., cheating in Shu, Gino &
407 Bazerman's, 2011 study). However, these scenarios are still a far cry from police
408 investigations where telling a lie can have serious and long-term legal implications. Future
409 research should try to create more forensically relevant scenarios in which the Decision
410 component of ADCAT can be tested, without encountering ethical issues.

411 In the post-scenario questionnaire, the questions were focussed on collecting the
412 relevant data that could be inputted into the ADCAT formulae. This meant that other
413 questions regarding participants' understanding of the study and the scenarios was
414 overlooked. This information would further expand the current findings and provide insights
415 into the relationship between the decision to lie and construction of lies.

416 **Conclusion**

417 Cost-benefit calculations of lying were associated with decisions to lie; however, the
418 cost-benefits calculation of truth-telling were only associated with other-oriented lies.
419 Additional cost significantly predicted the expected value of lying and motivation to lie. The

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420 presence of a cost to another significantly reversed participants' preference for telling a self-
421 oriented lie. For other-oriented lies, an additional cost to oneself resulted in no preference for
422 deciding to lie or tell the truth. The current study builds upon previous research on the
423 Decision component of ADCAT and presents the first explorative testing of predictions
424 regarding the influence of reason to lie on the formulae within this component. Further
425 confirmative research is required to replicate our findings (Wigboldus & Dotsch, 2016).
426 Future studies should also look to use larger and more diverse samples and investigate
427 ADCAT in more forensically relevant scenarios where participants actually lie or tell the
428 truth.

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Appendix

453

Vignette questionnaire to assess ADCAT variables of the Decision component

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455

SCENARIO 1

456

All of the questions below refer to the scenario that you have just watched and that scenario only.

458

1. If **you** were in this situation, what would **you** decide to do? Circle one response below.

460

TELL A LIE

TELL THE TRUTH

462

463

Regardless of how you answered Question 1, please answer the following questions:

464

465

2. If you were to tell a lie in this situation and were believed, what do you think would happen?

467

.....

469

3. What is the probability that your lie would be believed and your answer to Question 2 would happen?

472

473

474

| | | | | | | | | | | |
|------------------------|-----|-----|-----|-----|------------------------------|-----|-----|-----|-----|------|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| Will <u>not</u> happen | | | | | Will <u>certainly</u> happen | | | | | |

475

4. Overall, how desirable is the outcome for your response to Question 2?

476

477

| | | | | | | | | | | |
|-----------------------|----|----|---------|----|---|---|---------------------|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Extremely undesirable | | | Neutral | | | | Extremely desirable | | | |

478

5. If you were to tell a lie in this situation and were not believed, what do you think would happen?

479

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481

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482

6. Overall, how desirable is the outcome for your response to Question 5?

483

484

485

| | | | | | | | | | | |
|-----------------------|----|----|---------|----|---|---|---------------------|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Extremely undesirable | | | Neutral | | | | Extremely desirable | | | |

486

7. If you were to tell the truth in this situation and were believed, what do you think would happen?

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8. What is the probability that your truth would be believed and your answer to Question 7 would happen?

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| | | | | | | | | | | |
|------------------------|-----|-----|-----|-----|------------------------------|-----|-----|-----|-----|------|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| Will <u>not</u> happen | | | | | Will <u>certainly</u> happen | | | | | |

495

9. Overall, how desirable is the outcome for your response to Question 7?

496

497

| | | | | | | | | | | |
|----|----|----|----|----|---|---|---|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
|----|----|----|----|----|---|---|---|---|---|---|

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Extremely undesirable Neutral Extremely desirable

498
499
500 **10. If you were to tell the truth in this situation and were not believed, what do you think**
501 **would happen?**
502
503
504
505 **11. Overall, how desirable is the outcome for your response to Question 11?**
506

| | | | | | | | | | | |
|----|----|----|----|----|---|---|---|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
|----|----|----|----|----|---|---|---|---|---|---|

Extremely undesirable Neutral Extremely desirable

507
508 **12. Regardless of how you answered Question 1, after considering your responses for**
509 **Question 2 to 11, what would you decide to do if you were in this situation?**
510 Circle one response below.
511
512 TELL A LIE TELL THE TRUTH
513
514 **13. If you have changed your decision from Question 1, why?**
515 If you would act the same as you responded to Question 1, please write N/A below.
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Table 1

665

Percentage of Initial and Final Truth/Lie Decisions as a function of Reason to Lie

| Reason to lie | Initial decision | | | Final decision | | |
|---------------|------------------|---------|----------|----------------|---------|----------|
| | Truth (%) | Lie (%) | X^2 | Truth (%) | Lie (%) | X^2 |
| Self-Neutral | 33 | 67 | 10.56** | 37 | 63 | 5.81* |
| Self-Cost | 70 | 30 | 15.04*** | 69 | 31 | 13.46*** |
| Other-Neutral | 35 | 65 | 8.01** | 42 | 58 | 2.46 |
| Other-Cost | 52 | 48 | .10 | 59 | 41 | 3.18 |

* $p < .05$

** $p < .01$

*** $p < .001$

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DECIDING TO DECEIVE FOR DIFFERENT REASONS

Table 2

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Descriptive Statistics and Point-Biserial Correlations (r_{pb}) for ADCAT Variables and Decisions to Lie as a function of Reason to Lie

| Reason to lie | ADCAT Variables | <i>M (SD)</i> | Decision to lie | |
|---------------|---------------------------------|---------------|----------------------|--------------------|
| | | | Initial (r_{pb}) | Final (r_{pb}) |
| Self-Neutral | Expected value of truth-telling | -2.61 (2.71) | -.05 | -.05 |
| | Expected value of lying | -.19 (1.93) | .32** | .35*** |
| | Motivation to lie | 2.42 (3.35) | .22* | .24* |
| Self-Cost | Expected value of truth-telling | -2.38 (2.63) | -.14 | -.15 |
| | Expected value of lying | -1.75 (2.62) | .27** | .28** |
| | Motivation to lie | .63 (3.67) | .29** | .31** |
| Other-Neutral | Expected value of truth-telling | -2.34 (2.06) | -.15 | -.27** |
| | Expected value of lying | -.48 (2.67) | .21* | .33** |
| | Motivation to lie | 1.86 (3.34) | .26* | .43*** |
| Other-Cost | Expected value of truth-telling | -1.75 (2.64) | -.24* | -.35** |
| | Expected value of lying | -1.03 (2.26) | .33** | .32** |
| | Motivation to lie | .73 (3.39) | .40*** | .49*** |

* $p < .05$

** $p < .01$

*** $p < .001$

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DECIDING TO DECEIVE FOR DIFFERENT REASONS

695 Table 3

Summary of Hierarchical Multiple Regression Analyses Predicting Decisions to Lie

| Variables entered | Decision to lie | | | | | |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Initial | | | Final | | |
| | β Step 1 | β Step 2 | β Step 3 | β Step 1 | β Step 2 | β Step 3 |
| Expected value of truth-telling (EVtruth) | -.03** | -.03** | -.02 | -.03** | -.03** | -.02 |
| Expected value of lying (EVlie) | .07*** | .06*** | .08** | .06*** | .05*** | .09*** |
| Beneficiary of the lie | | .08 | .04 | | .02 | -.09 |
| Presence of additional cost | | -.20*** | -.22** | | -.20*** | -.21** |
| EVtruth X Beneficiary of the lie | | | -.002 | | | -.04 |
| EVlie X Beneficiary of the lie | | | -.004 | | | -.03 |
| EVtruth X Presence of additional cost | | | .003 | | | -.006 |
| EVlie X Presence of additional cost | | | -.03 | | | -.04 |
| EVtruth X Beneficiary of the lie X Additional cost | | | -.04 | | | .03 |
| EVlie X Beneficiary of the lie X Additional cost | | | .06 | | | -.05 |
| R^2 | .13 | .18 | .19 | .10 | .13 | .18 |
| <i>Model F</i> | 27.94*** | 19.30*** | 8.28*** | 19.26*** | 13.90*** | 7.48*** |
| ΔR^2 | | .04 | .01 | | .04 | .04 |
| ΔF | | 9.37*** | .95 | | 7.81*** | 2.91** |

* $p < .05$
 ** $p < .01$
 *** $p < .001$

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