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Abstract

Do people cheat more if it helps their team? Does this behavior change when their actions are disclosed to their peers? To answer these questions, we run a lab-in-the-field experiment with girl scouts and boy scouts during their summer camps. Scout troops are organized in patrols: these are thus naturally occurring and persistent teams, which undertake many different activities and own common goods; moreover, loyalty is salient. We implement a variation of a standard cheating task, in which cheating behavior by an individual scout could i) either be kept private or disclosed to other members of their patrol; and ii) imply the release of an individual voucher to be spent on individual goods or a team voucher to be spent on collective goods for the patrol. While we find a very low overall level of cheating, our results show that people cheat more frequently when their decision is disclosed to their team and not kept private. On the other hand, no significant difference is observed when cheating rewards the team rather than the individual.

Keywords: Lying; deception; cheating; public scrutiny; social image; adolescents; children; scouts; loyalty; experiments; behavioral economics
JEL classification: C90, D91.

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> "Why do you laugh?" the Marionette asked her, worried now at the sight of his growing nose. "I am laughing at your lies." "How do you know I am lying?" "Lies, my boy, are known in a moment. There are two kinds of lies, lies with short legs and lies with long noses. Yours, just now, happen to have long noses." Pinocchio, not knowing where to hide his shame, tried to escape from the room, but his nose had become so long that he could not get it out of the door.
> Collodi, Carlo. *The Adventures of Pinocchio*, 1882

1 Introduction

Some of the most famous fairy tales teach children not to cheat. The story of Pinocchio, for instance, tells of a wooden puppet whose nose grows every time he tells a lie. The main idea this story conveys is that lies have short legs; nobody can run far with them without being noticed. In real life, however, lies often go a long way[1] and those who cheat might enjoy a privilege over those who did not. It goes without saying that cheating is a widespread phenomenon, among both adults and young people. We do not need Collodi's imagination to find examples of corruption, corporate scandals, tax evasion, and fraud that impose heavy burdens on society.

This paper builds on a recent but growing body of economic literature that studies the cheating behavior of adults interacting in a social context, which suggests that individuals making joint decisions in groups cheat more than individuals deciding alone (Gino et al., 2009; Sutter, 2009; Gino et al., 2013; Conrads et al., 2013; Kocher et al., 2018; Soraperra et al., 2017; Korbel, 2016). There are many reasons why this might be the case; we review some of these findings in the next section. Among these findings, a recent paper of Hildreth et al. (2016) focused on the role of loyalty toward one's own group in explaining cheating behavior. The researchers found that loyalty induces more ethical behavior (reduces cheating), although competition tends to mitigate this effect. Two other recent papers focus on individuals' decisions about cheating, exposing such decisions to *ex post* public scrutiny; these studies find no evidence (Van de Ven and Villeval, 2015) or at best, mild evidence (Ostermaier and Uhl, 2017) that public scrutiny restrains cheating.

We conduct an experiment with natural, persistent teams, in which loyalty is salient, examining the role of public scrutiny, as well as collective payments to the benefit of the team, in determining unethical behavior. In particular, we are interested in addressing the following research questions:

[1] Theodor Adorno used the expression "lies have long legs" when discussing – very much ahead of his time – the relation between authoritarianism and fake news (Adorno, 2005). Thanks to Alan Miller for the insight.

how is the level of cheating affected when subjects' decision to cheat is exposed to their *team's* scrutiny (not public scrutiny), and do subjects cheat more if this helps their team members? To address these questions we ran a lab-in-the-field experiment with both girl scouts and boy scouts, aged 12–16, during their 2017 summer camps. The task that was used was a modified version of the coin task proposed by Bucciol and Piovesan (2011). In our version of the task, subjects made two simultaneous extractions out of two urns ("yellow" and "blue"), each of which contained two possible outcomes: €0 or €10 (see section 4). Subjects had to record the amounts they drew on a yellow card, to be kept private, and on a blue card, which was disclosed to the team at a later stage together with the original amount drawn from the urn. The other treatment dimension concerned the final payoffs: the payoffs reported on the yellow and blue cards could be either paid out with individual vouchers or with team vouchers, to be spent at the local scouting store to purchase goods for private, individual use (e.g., backpacks, uniforms, or sleeping bags) or public collective use (tents, pots, and other team equipment).

The scout population used in this study is interesting for a number of reasons. First, scout troops are organized into patrols that compete with each other in many activities during the year and that collectively own assets. These conditions make patrols natural teams, quite different from the minimal groups that are usually created in the lab for this kind of experiment (Jacquemet et al., 2018). Second, while the literature on cheating is accumulating quickly, only limited research has been conducted on the adolescent age group.[2] However, analyzing the above-mentioned research questions over this population is extremely relevant: adolescence is one of the crucial phases in personality development, during which most of the behaviors that will be maintained throughout a person's life are formed (Gervais et al., 2000). Third, scouts attribute so much importance to honesty and loyalty that they include them as the first and second items, respectively, in their law.[3] This allows us to account for a social norm against cheating. Fourth, scouting is one of the largest and most widespread youth movements in the world.

Our results suggest that loyalty plays an ambiguous role in our context: on the one hand, these adolescents do not indulge in cheating when their decision remains private, including when it might advance the interests of their team. On the other hand, they cheat significantly more when they know that their decision will be subject to their team's scrutiny.

The remainder of this paper is organized as follows: section 2 briefly reviews the existing literature, section 3 presents a theoretical model and its predictions, which are tested with the experiment described in section 4. The results of the analysis are presented in section 5, and section 6 concludes.

[2]Relevant exceptions are Korbel (2016) and Kocher et al. (2018).

[3]1) A scout's honor is to be trusted and 2) A scout is loyal (see Appendix A)

2 Literature Review

Studies on cheating behavior have flourished in the last fifteen years; They were recently reviewed by Rosenbaum et al. (2014), Irlenbusch and Villeval (2015), Gino (2016) and Jacobsen et al. (2017). More recently, several authors have focused on cheating as a social phenomenon, exploring the role of groups in determining unethical behavior.

One consistent finding in this body of literature is that group interactions determine more cheating than individuals deciding alone. Perhaps the first paper studying deception in teams is Sutter (2009). In his experiment, groups had to discuss a potentially deceptive signal and make a collective decision about it. Sutter was interested in observing individuals explicitly reasoning about the motives of their decisions (all team discussions were recorded). Incidentally, in this experiment, groups sent the deceitful message less often than individuals, but only as a result of "deception through telling the truth" due to sophisticated team reasoning (Sugden, 2011). Kocher et al. (2018) confirm this result. Unlike these studies, individuals in our experiment make decisions alone.

Another common finding reported in the literature is that lying increases if the cheater can hide in the crowd. Conrads et al. (2013) ran an experiment in which subjects had to report the privately observed outcome of a dice roll. It was found that more cheating happened when subjects reported in pairs (in this case, they reported the sum of the two outcomes) than when they reported alone. Again, this effect is not applicable to our design as experimenters always observe the individual reports, even when the final payment is aggregated at the patrol level. Previous contributions also pointed out that observing other group members cheating increases the probability of cheating. Gino et al. (2009) ran an experiment in which many subjects simultaneously undertook a task in which cheating would spare effort; one person, who was wearing the university t-shirt (in-group) but was actually working with the researchers, ostensibly did just that. This increased cheating by all other group members. However, cheating decreased when the confederate wore the t-shirt of a rival university. It should be noted that this contagion effect could not happen in any our experiment.

Other effects are more relevant to our design. For instance, previous studies have shown that cheating increases when the lie positively affects the welfare of others, whether they be strangers or members of the same group (Gino and Pierce, 2010; Wiltermuth, 2011; Erat and Gneezy, 2012; Shalvi and Leiser, 2013). Gino et al. (2013) showed that this effect occurs both because the presence of other beneficiaries offers to subjects an easy justification for their dishonesty, and also (to some extent) because subjects care about the potential spillovers of their actions on others. For instance, Houser et al. (2016) show that parents cheat significantly more to benefit

their children than to benefit themselves. Contrary to these experiments, our design ensures one subject's cheating could increase either the group voucher or the individual voucher, but never the two at the same time.

Hildreth et al. (2016) focus on the ambivalent role of loyalty to a group in determining cheating behavior. They show that loyalty generally has a positive effect on ethical behavior. They use both minimal groups, where loyalty is manipulated and primed, and natural groups, in the form of student study groups and fraternities;[4] the former comprises groups of people who happen to work together while the latter have also pledged loyalty *to one another*. We have already mentioned the importance of loyalty to boy scouts. In fact, the Scout Law presents loyalty as a *general* virtue (i.e., the recipient is left implicit). In this sense, the concept is strongly related to other virtues such as honesty, humility, benevolence, and ethical behavior in general.

Our scouts also share the same religious (Catholic) beliefs. The role of religious beliefs in cheating behavior has been explicitly explored in two papers: Utikal and Fischbacher (2013) show that a group of nuns performing an individual cheating task is willing to make disadvantageous lies to appear honest; Shalvi and Leiser (2013), conducting an individual cheating experiment with two populations of female students at a secular and a religious university campus, respectively, in Israel, find no evidence of lying among religious students, but a positive amount of lying among secular students.

The degree of public scrutiny is another important aspect to understand cheating. Most of the experiments on cheating (including ours) envisaged a fully anonymous protocol, at least vis-à-vis the experimenter, out of fear that cheating would be significantly curbed by non-anonymity. However, some papers introducing monitoring and/or punishment by the experimenter (Mazar et al., 2008; Belot and Schröder, 2013) still show a significant level of cheating. Gneezy et al. (2018) compare two experimental treatments: one in which cheating is fully observable by the experimenter, and another in which subjects have complete privacy. The researchers find only moderate differences in the extent of lying. Other experiments introduce an anonymous observer other than the experimenter. In Houser et al. (2016), the presence of their child induces parent to cheat less. In Van de Ven and Villeval (2015), the presence of an anonymous observer does not significantly affect the level of cheating, either when the subject's identity is revealed to the observer, when the observer can communicate with the subject, or when the observer can reveal the subject's lies to the receiver. In one of our treatments, the decision to cheat is revealed to the whole team; this results in increased cheating.

[4] Hildreth et al. (2016) conduct the experiment among three fraternities, comprising 89 subjects. Using scout patrols allows us to observe a larger number of teams (31 in our case, comprising 160 subjects), which also tend to be homogeneous (in terms of social status/wealth), at least within the same troop.

Social preferences and personality traits develop from childhood and it is easy to expect cheating behavior to develop with age as well. However, there is only a limited amount of literature studying deception with non-adult subjects. Bucciol and Piovesan (2011) find that children (aged 5–15) lie when they have the opportunity to do so, but tend to be honest when someone reminds them that lying is not good. Glätzle-Rützler and Lergetporer (2015) find that among children (aged 10 or 11) and early adolescents (aged 15 or 16), lying aversion is widespread and the propensity to lie increases significantly with age. This is confirmed by Maggian and Villeval (2016) who, by analyzing a sample of children aged 7–14, found that older children lie less than younger ones and use self-justification to lie. Moreover, they emphasizes that lying is driven mainly by selfish motives and jealousies. There are also only a few studies that examine how children's behavior changes when acting alone or in a group. In an experiment with students aged 11–16, Korbel (2016) find significant differences across ages in both group and individual cheating behavior. Specifically, while older students (aged 14–16) exhibit cheating both in the individual and in-group decision, younger students (aged 11–13) did so only in the in-group decision. Our results support this relation between age and propensity for cheating.

3 Theoretical Framework

Generally speaking, we are interested in modeling individuals' decisions to truthfully report the observed extraction. In our setting, the presence of the team could influence the decision along two dimensions: i) public payoffs, in which the outcomes might or might not be paid collectively to the team; and ii) public scrutiny, in which the individual decision might or might not be disclosed to the team.

In the simplest setting, the individual decision produces only individual payoffs and remains private; we model the problem of deciding whether to cheat as a general trade-off between the monetary returns of cheating and the non-monetary ethical cost of doing so. Assuming that the cost of lying is linear in the cheated amount, the resulting utility can be written as:

$$u(m_d) = m_d - m_t - \ell(m_d - m_t)$$

where $m_d - m_t$ is the difference between the reported amount and the observed amount; the cost of lying is represented by the coefficient ℓ times the net cheated amount.[5] We normalize m_t to 0 to obtain $u(m_d) = m_d - \ell m_d$.

[5]The fact that monetary incentives enter directly into the utility function does not lead to a loss of generality. In the presence of different utility functions, it would be sufficient to transform the cost of lying accordingly. Similarly, the fact that ℓ only depends on the cheated amount and not on the original amount is irrelevant, as long as m_t is considered to be fixed.

We first consider the possibility of public payoffs. The returns from cheating are shared with the other $n-1$ members of the team, and therefore enter the individual utility function discounted by some factor α. Notice that $\alpha = \frac{1}{n}$ in the case of n perfectly selfish participants; instead, $\alpha > \frac{1}{n}$ if the individual positively values giving money to other members of his team. On the other hand, the ethical costs of lying might be attenuated if such gains benefit others as well (Gino et al., 2013 call this *self-serving altruism*), possibly reducing the cost of lying by ℓ_α:

$$u_{T=1}(m_d) = \alpha m_d - (\ell - \ell_\alpha)m_d$$

(where $T = 1$ denotes Team payoffs), resulting in the general form:

$$\begin{aligned} u(m_d) &= (1-T)[m_d - \ell m_d] + T[\alpha m_d - (\ell - \ell_\alpha)m_d] = \\ &= m_d - \ell m_d - T m_d + T\ell m_d + T\alpha m_d - T\ell m_d + T\ell_\alpha m_d = \\ &= (1 - \ell + T(\alpha - 1 + \ell_\alpha))m_d \end{aligned}$$

Given the main research question of the present study, we are interested in conceptually distinguishing pure altruism (the mere utility of having other team members increase their own gains) from the "warm glow" feeling (Ottoni-Wilhelm et al., 2017; Andreoni, 1990) of having adhered to the social norm of *loyalty* toward team members. The loyalty effect can be precisely defined as the component of α which would be absent if m_d was not chosen by the individual, but was exogenously defined. The coefficient α can then be decomposed as $\alpha = \frac{1}{n} + \alpha_e + \nu_\alpha$, where α_e denotes the "pure altruism" component and ν_α is the "team loyalty" component. Assuming that the individual does not value *harming* other team members ($\alpha_e \geq 0$), that the social norm of loyalty is present ($\nu_\alpha \geq 0$) and that the subject would prefer to receive the entire monetary amount rather than share it ($\alpha \leq 1$ – after all, he could always redistribute the gains *ex post*), we have $\frac{1}{n} < \alpha < 1$.

The second dimension concerns public scrutiny, inasmuch as the decision might be observed by other members of the team. This might affect the individual's decision through different channels such as concerns about social image (Bénabou and Tirole, 2006; Ariely et al., 2009; Lacetera and Macis, 2010), or the fear of stigma and retaliation (Rasmusen, 1996; Funk, 2004; Herrmann et al., 2008). This dimension can be simply modeled by adding a function of the cheated amount; for simplicity, we assume this depends on some linear factor σ, denoting the effect of social pressure on the decision:

$$u_{D=1}(m_d) = (1 - \ell + T(\alpha - 1 + \ell_\alpha))m_d + \sigma m_d.$$

(where $D = 1$ indicates that the decision to cheat is Disclosed to the team), resulting in the general form:

$$u(m_d) = (1 - \ell + T(\alpha - 1 + \ell_\alpha))m_d + D\sigma m_d. \quad (1)$$

In the first place, the presence of the group may increase the costs of cheating because, for instance, individuals want to conform to a prevailing social norm of honest behavior; in this case, $\sigma_h < 0$. However, there might be other circumstances and populations (in particular, the present study examines adolescents) whereby not taking the payoff dominant decision would be seen as a sign of "irrationality"[6] and therefore cheating might be the prevailing norm. In this case, $\sigma_h > 0$. Finally, σ also depends on whether the returns from cheating go to the individual or are redistributed to the team. It is reasonable to assume the existence of a social norm of loyalty that prescribes subjects must favor other team members; this is denoted with $\sigma_\alpha > 0$[7]. All in all, the presence of the group potentially produces two potentially countervailing effects, so that we are hardly able to make predictions about the sign of $\sigma = \sigma_h + T\sigma_\alpha$. However, Equation (1) can be rewritten as:

$$u(m_d) = (1 - \ell + D\sigma_h + T(\alpha - 1 + \ell_\alpha + D\sigma_\alpha))m_d. \quad (2)$$

Our model enables testing some useful predictions on individual behavior:

Prediction 1. If the combined effects of altruism (α), the reduced cost of lying due to self-serving altruism (ℓ_α), and a taste for conformity to the social norm of favoring one's own team (σ_α) are large enough (i.e., $\alpha+\ell_\alpha+D\sigma_\alpha > 1$), more cheating will be observed in the public payoff conditions than in the private payoff conditions ($u_{T=1}(m_d) > u_{T=0}(m_d)$).

Prediction 1.1. If $\alpha + \ell_\alpha > 1$, then Prediction 1 also applies when the test is restricted to the conditions in which the decision is private. In this case, since we can simply assume $\alpha < 1$ (in light of the possibility one might just redistribute one's earnings to the team), we can also conclude that $\ell_\alpha > 1 - \alpha > 0$ (benefiting the team reduces the cost of lying).

Prediction 2. If the combined effects on reputation of "cheating" (σ_h) and of "altruistic cheating" (σ_α) are large enough (i.e., $\sigma = \sigma_h + T\sigma_\alpha > 0$), then we have $u_{D=1}(m_d) > u_{D=0}(m_d)$, and we will observe higher levels of cheating when the decision is observed by other team members than when it remains private.

Prediction 2.1. Ruling out altruistic cheating and thus keeping the individual payoff constant, if subjects are happy to be seen cheating ($\sigma_h > 0$), more cheating will be observed in the Team treatment than in the Individual treatment.

[6] Our model deliberately considers the desire to adhere to the social norm when observed (σ_h), as distinct from the mere desire to adhere to the social/ethical norm of honesty (ℓ).

[7] σ_α differs from ν_α because it represents the effect of being *observed* by other team members favoring the team, rather than simply the warm glow effect of helping the team.

4 Experimental Design and Hypothesis

Our study is based on a modified version of the simple coin task proposed by Bucciol and Piovesan (2011). In the experiment, we exogenously manipulate: (1) the publicity of the individual choice (either kept private or disclosed *ex post* to the team), and (2) the beneficiary of the payoffs (returns are paid either to the individual or to the team), in a 2×2 factorial design. Notice that the manipulation of the first condition is within-subject, as all experimental subjects make two cheating decisions, while the manipulation of the second condition is between-subjects, such that 80 subjects were paid with an individual voucher and 80 subjects were paid with a collective voucher. Our four experimental conditions are described in Table 1. Note that, in accordance with the experimental literature on cheating, our design does not allow us to directly observe cheating. We compare instead the share of respondents reporting "€10" to the probability distribution of a repeated fair coin toss (i.e., a binomial distribution).

Table 1: Experimental Design

Between-subject	*Within-subject*	
	Private decision	**Disclosed decision**
Individual Payoff	Private&Individual (80 obs)	Disclosed&Individual (80 obs)
Team Payoff	Private&Team (80 obs)	Disclosed&Team (80 obs)

Two simultaneous random coin flips. Each subject was given a sealed envelope containing four pairs of triangles. Each pair comprised a blue and a yellow triangle, stapled together. In the inner part of each triangle either the amount €0 or €10 was printed. All together, the four pairs of yellow and blue triangles offered the following combinations: i) Y €0, B €0; ii)Y €10, B €0; iii)Y €0, B €10, iv) Y €10, B €10. By drawing one pair of triangles from the envelope, it was as if each subject made two simultaneous coin flips, which could each deliver either €0 or €10. One at a time, after drawing a pair of triangles from the envelope, the subjects dropped the envelope with the other three triangles in a trash bin (to be sealed and burned in the bonfire the same night), entered a tent where they unstapled the yellow and blue triangles, and recorded the privately observed values respectively on a yellow and a blue squared card previously given to them.

The decision to cheat. In the tent, there was also a yellow box. By dropping their yellow square into the yellow box, the subjects finalized their private decision to cheat. In fact, no one except the researchers could inspect the yellow box at the end of the experiment. The subjects then kept both

the blue triangle and square in their pockets and exited the tent, throwing the remaining yellow triangle in the same trash bin as before.

Disclosure of the decision. After all subjects made their two decisions, they entered the tent by team/patrol. In a circle, each subject revealed to the team both the blue triangle (the drawn amount) and the blue square (the declared amount) thus sharing *ex post* their decision to cheat. They then stapled all the blue squares to a team sheet and dropped this sheet into a blue box. Finally, they ended this phase of the experiment by exiting the tent and dropping the blue triangles into the trash bin. Note that, while subjects knew their blue decision was going to be disclosed at a later stage to the team, both decisions (the individual one and the one disclosed to the team) were made at the individual level; in no way was any form of collective thinking tested as in Sutter (2009).

Individual vs. team payoffs. All subjects were paid with a voucher. The voucher could be spent at the local scouting shop, which sells all sorts of equipment, both for individual (e.g., uniforms, backpacks, and trekking shoes) and team use (e.g., tents, pans, and woodworking tools).[8] The treatment variation concerned the aggregation of these payoffs: in three troops, totaling 80 subjects, each subject received an individual voucher; in the other three troops, also totaling 80 subjects, individually declared amounts were aggregated in a collective team voucher.

While each subject participated in both individual and individual-within-group treatment (in a within-subject design), each scout group was randomly assigned to the "for self" – "for group" treatment (in a between-subject design), as shown in Table 1.

We now outline the hypotheses that stem from our model and that can be tested with our experimental design. We denote with $x_i \in \{0, 1\}$ the reported amount (1 corresponds to reporting €10).

H1 **Lure of profit and cheating in teams**:
$\overline{x} > 0.5$ vs. $\overline{x} = 0.5$.

In general, evidence of cheating emerges when the distribution of x_i (corresponding to m_d in the model) is higher than expected from a binomial distribution. We therefore begin by testing whether there is any evidence of cheating in our sample regardless of treatment.

[8]These are specialized stores that typically provide material for both individuals and patrols. Scouts often purchase technical materials in these stores for their activities during the year and, above all, for the activities carried out during the camp: camping tents, bivouac, thermal bowls, boots etc. In this sense, coupons are precious and can be compared to a monetary reward. This allows the experimenter to have a comparable payment across conditions. When the beneficiary is the individual (single coupon with which the individual can buy goods for private use, e.g., boots) or when it is the patrol (indivisible coupons with which the patrol can buy goods for common use, e.g., camping tents).

H2 **Disclosure and cheating**:

$\overline{x}_{Disclosed\&Individual,\ Disclosed\&Team} > \overline{x}_{Private\&Individual,\ Private\&Team}$

The first hypothesis to test our treatment conditions concerns the publicity of payoffs. We check whether, all else remaining the same, knowing that cheating will be observed *ex post* by other team members affects cheating behavior. This corresponds to verifying Prediction 2 in our behavioral model, that is, whether $\sigma = \sigma_h + T\sigma_\alpha > 0$.

H2a **Disclosure and cheating when the individual benefits**:

$\bar{x}_{Disclosed\&Individual} > \bar{x}_{Private\&Individual}$

H2b **Disclosure and cheating when the team benefits:**

$\bar{x}_{Disclosed\&Team} > \bar{x}_{Private\&Team}$

These two hypotheses are simply the disaggregated versions of H2, respectively, in the "individual payoff" and "team payoff" cases. They correspond to testing, in our behavioral model, whether $\sigma_h > 0$ and $\sigma_h + \sigma_\alpha > 0$, respectively.

H3 **Team payoffs and cheating:**

$\overline{x}_{Private\&Team,\ Disclosed\&Team} > \overline{x}_{Private\&Individual,\ Disclosed\&Individual}$

This hypothesis tests Prediction 1: whether the degree of publicity of payoffs (team payoffs or individual payoffs) has an effect on the level of cheating. It corresponds to testing whether $\alpha + \ell_\alpha + K\sigma_\alpha > 1$ in our behavioral model; that is, whether the combined effects of altruism (α), reduced cost of lying due to self-serving altruism (ℓ_α), and conformity to the social norm of favoring one's own team (σ_α) are large enough to increase cheating in the team treatments.

4.1 Procedures

The experiment was run in August 2017, during the summer camp of six scout troops from Trentino-Alto Adige, a region in northeastern Italy (all scout troops were from the same region and held their camp in the region). Each team comprised 4–6 patrols, for a total of 31 patrols, and 160 subjects evenly distributed by gender (51% males and 49% females), for a total of 320 observations (each subject made both the Private and the Disclosed decisions),[9] which reduce to 315 due to 5 missing observations in the Private decision. After reading the instructions, each participant took a first envelope, which contained a randomly assigned ID[10] written on a white card,

[9]One pilot was run previously in another team, and one last session was discarded because the summer camp involved only two patrols that were formed ad hoc and did not reflect the actual patrols operating during the year.

[10]Following a tradition among Italian boy-scouts, each subject was randomly assigned a fantasy identity (known as a *totem*), composed by an animal name followed by an adjective.

and the two yellow and blue squared cards reporting the same ID. Each participant then opened a second envelope, containing the four pairs of stapled triangles, drew one, and threw the remaining ones in the trash bin as described above. Then each participant entered a camping tent specifically mounted at a distance from where the rest of the troop was standing, and performed the task (writing on the yellow and blue squares the amounts printed on the same color triangles). Afterward, patrols entered the tent one after the other, and completed the blue task (stapling together the square blue card, dropping the sheet in the blue box and throwing the blue triangles in the thrash bin). While each subject/patrol performed the task, the rest of the troop was kept busy with traditional scout games and songs.

When all the members of the troop had completed the experimental tasks,[11] they were asked to answer a short questionnaire that included standard sociodemographic questions (see Appendix C.1), and received the payment. In order to guarantee full anonymity, payments were placed in an envelope with the ID of each subject (or with the name of the patrol for the Team treatment). The envelopes were then placed at the center of the camp so that each individual could take it whenever he deemed it appropriate after the researchers had left the camp. We paid the subjects for only one of the two tasks performed (yellow or blue squares). To determine which one, a coin was tossed at the end of the experiment. The entire session lasted between one hour and a half and two hours. Instructions for the two tasks (translated in English) are reported in Appendix C.

5 Results

5.1 Non-parametric analysis

While the objective probability of extracting €10 is $\pi = 0.50$, we find winning rates of $\pi = 0.54$, on average, across treatments. This means that overall, and in line with the literature on cheating,[12] subjects reported the true amount in 92% of cases[13] when facing the temptation to lie. A one-sample test of proportion for the whole distribution and a one sample Kolmogorov-Smirnov test indicates that our data can be distinguished from binomially distributed data ($p = 0.08$ and $p = 0.00$, respectively), hence confirming hypothesis H1.

[11] The session included another experiment, which was held after the experiment described in this paper. Participants knew in advance that they would participate in two different activities and then would have to to fill a questionnaire: however, instructions for the second activity were provided only after the end of the first experiment. Final payments were cumulated across the two experiments.

[12] Pascual-Ezama et al. (2015), for instance, find that across 16 countries and 3 treatments, 86% of the sample resisted the temptation to lie.

[13] $100\% - 2(54\% - 50\%)$

Figure 1 depicts the frequency at which subjects reported €10 in the Individual payoffs vs. Team payoffs treatments (left panel), in the Private vs. Disclosed treatments (center panel), and across the four treatments (right panel). The dotted line presents the expected distribution of a fair coin toss. Table 2 presents the percentages of each report under each treatment, together with the results of a one-sample test of proportion (p-values are reported in column 4).

Figure 1: Percentage of subjects reporting 10

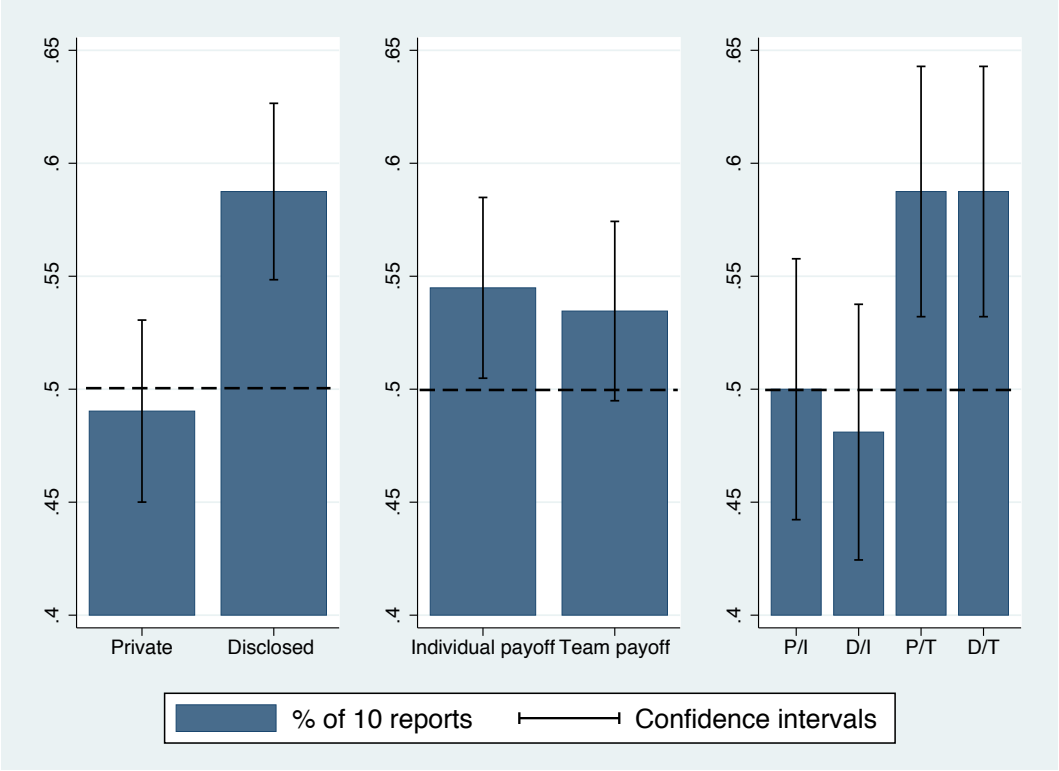

Table 2: Percentage of observations reporting 10 across treatments

Condition	Mean	p-value	N
Private Decisions	49%	0.595	155
& Individual Payoff	50%	0.500	76
& Team Payoff	48%	0.632	79
Disclosed Decisions	59%	0.013	160
& Individual Payoff	59%	0.058	80
& Team Payoff	59%	0.058	80

The results depicted in Table 2 and Figure 1 show that when an individual decision is disclosed to the team, the norm of honesty is debased: cheating

increases, confirming H2. Specifically, a t test on the equality of means and a Wilcoxon rank-sum test both confirm that $\overline{x}_{Disclosed\&Individual,\ Disclosed\&Team} > \overline{x}_{Private\&Individual,\ Private\&Team}$ (p-value = 0.042 and p-value = 0.084, respectively), but do not confirm that $\bar{x}_{Disclosed\&Individual} > \bar{x}_{Private\&Individual}$ (p-value = 0.138 and p-value = 0.274, respectively) and only marginally confirm that $\bar{x}_{Disclosed\&Team} > \bar{x}_{Private\&Team}$ (p-value = 0.0903 and p-value = 0.180, respectively). This shift in behavior does not seem to be driven by $\alpha + \ell_\alpha + D\sigma_\alpha > 1$; that is, whether the combined effect of altruism (α), reduced cost of lying due to self-serving altruism (ℓ_α), and taste for conformity to the social norm of favoring one's own team (σ_α) toward the group since $\overline{x}_{Private\&Team,\ Disclosed\&Team} \not> \overline{x}_{Private\&Individual,\ Disclosed\&Individual}$ (p-value = 0.572 and p-value = 0.855, respectively), therefore not supporting H3. These results are unchanged when using a Kolmogorov-Smirnov test for equality of distribution .

5.2 Parametric Results

In order to provide a quantitative assessment of the relation between the probability of reporting €10 and a number of individual-level covariates, we run Probit regressions; their marginal effects are reported in Table 3.

Explanatory variables include the two treatments, the interaction between the decision being disclosed (*DecisionDisclosed*) and the patrol benefiting from the lie (*TeamPayoff*), a dummy for being at least 15 years old (subjects were between 12 and 17 years old), a dummy for being male, and several measures extracted from responses to the final questionnaire: a measure of overall risk propensity behavior, five indicators of personality traits, and an indicator of happiness. Risk propensity is measured in the following domains: recreational, financial, ethical, health, and social. For each domain, two questions taken from the Domain-Specific Risk-Taking (DOSPERT) Scale (Blais and Weber, 2006) were administered to participants; to obtain the overall risk propensity measure, we computed the average score of the ten questions. The scale goes from 1–7, where 1 represents a low risk propensity and 7 a high risk propensity. Personality traits included in the model are the "Big Five", investigated through a revised Italian version of the Ten-Item Personality Inventory (Chiorri et al., 2015): extraversion (*big_1*), agreeableness (*big_2*), conscientiousness (*big_3*), neuroticism (*big_4*), and openness to experience (*big_5*). In the Ten-Item Personality Inventory, possible answers to each question range from 1 (*completely disagree*) to 7 (*completely agree*); each personality trait is then measured as the score of the question directly asking about the trait, minus the score of the question asking about the opposite trait.

First, we test hypotheses [H2] and [H3] (in columns (1) and (3)). In keeping with the non-parametric results, when the decision is *disclosed*, the

Table 3: Probit results

	(1)	(2)	(3)	(4)	(5)
DecisionDisclosed	0.097**	0.087	0.117**	0.072	0.075
	(0.046)	(0.068)	(0.048)	(0.070)	(0.071)
TeamPayoff	-0.009	-0.019	0.006	-0.038	-0.043
	(0.061)	(0.082)	(0.059)	(0.077)	(0.077)
Interaction		0.019		0.087	0.089
		(0.094)		(0.098)	(0.100)
Sex			-0.082	-0.082	-0.080
			(0.059)	(0.059)	(0.057)
Old			-0.107	-0.107	-0.105*
			(0.067)	(0.067)	(0.063)
Risk			0.060*	0.060*	0.073**
			(0.036)	(0.036)	(0.034)
Extraversion (big_1)			0.014*	0.014*	0.014*
			(0.007)	(0.007)	(0.008)
Agreeableness (big_2)			0.014	0.014	0.013
			(0.014)	(0.014)	(0.014)
Conscientiousness (*big_3*)			0.003	0.003	0.001
			(0.011)	(0.011)	(0.011)
Neuroticism (*big_4*)			-0.002	-0.003	0.005
			(0.010)	(0.010)	(0.010)
Openness to experience (*big_5*)			0.007	0.007	0.002
			(0.014)	(0.014)	(0.014)
Happiness					0.034**
					(0.015)
N	315	315	283	283	277

Note: Average marginal effects from estimation with probit: dependent variable is x_i. Clustered (at the patrol level) standard errors in parentheses.

probability to report €10 is higher. In particular, from column (3) in Table 3, we see that the average probability to report €10 increases by 12 percentage points under the treatment, when controlling for covariates. Holding all other variables in the model at their means, the predicted probability of declaring €10 when the decision is private or when the choice is disclosed are 0.47 and 0.59, respectively. Instead, being the team the beneficiary of the cheating does not significantly influence the individual behavior, as highlighted by the non-significant coefficient for *TeamPayoff*.

In order to test hypotheses [H2a] and [H2b], we include the interaction between the two treatments (columns (2) and (4)) in the model. The lack of significance for *DecisionDisclosed* (p-value = 0.294 in column (4), where we control for main observables) highlights that, when the beneficiary of cheating is the individual, disclosure does not significantly affect the individual behavior. Instead, a Wald test on the sum of coefficients for *DecisionDisclosed* and the interaction term results in an estimated increase by 15.9 points, and a Wald test rejects the null of no difference (p-value=0.017); that is, when the beneficiary of the lie is the team, disclosing the choice to the team itself increases individual cheating behavior. This "loyalty effect," however, becomes only marginally significant if we discard the covariates, i.e., run the same Wald test on coefficients from column (2) (p-value = 0.097). Considering that estimated coefficients on interactions in ordered models are difficult to interpret (Ai and Norton, 2003), we replicate the analysis with OLS (see Table 4, Appendix B), obtaining qualitatively unchanged results. Again, we find no significant evidence in favor of [H2a], while evidence in favor of [H2b] is significant only when we include covariates (p-value = 0.027 with, p-value = 0.110 without).[14] This is also in line with non-parametric results, which do not consider covariates and indeed yield, at most, marginally significant evidence in favor of [H2b].

As for the control variables, our data show that the coefficient for being at least 15 years old is negative (in line with Korbel, 2016), but only marginally significant. Gender also does not seem to influence the cheating propensity (in contrast with Bucciol and Piovesan, 2011; Muehlheusser et al., 2015). The only personality trait which seems to have an impact, albeit a marginal one, on individual behavior is extraversion (*big_1*). We find only mild evidence that less risk-averse individuals exhibit a higher propensity to cheat.

Intriguingly, if the control variables include the response to a question about happiness in life, as formulated in the European Value Survey (variable *happiness*), we find that it is highly significant *and* that, once it is introduced, the coefficient for our measure of overall proneness to risk becomes larger and more significant (column (5)). It is worth remembering that the response

[14] A likelihood test does not reject the independence of observations within patrols/troops; in any case, all p-values refer to clustered standard errors; we also verified that a hierarchical model yields qualitatively similar results.

to the question on happiness could easily be influenced by the results of the experiment (for this reason, we excluded it from the main estimation). Hence, the result is consistent with the possibility that subjects who declared €10 *either* actually drew a €10, which influenced their answer to the question about happiness, *or* cheated, which is related to their propensity to risk. This suggestive evidence, however, cannot be verified, given that luck and cheating are, by design, empirically indistinguishable.

6 Conclusions

At the end of his adventure, Pinocchio understands that lies have short legs and long noses; that friends can fool one into misbehaving like the Fox, the Cat, and Candlewick did, or be a force for good, like Jiminy Cricket and the Fairy with Turquoise Hair. As in every respectable fairy tale, Pinocchio, initially mischievous and selfish, learns the hard way to become an altruistic, well-behaved real boy.

In this paper, we studied lying under public scrutiny in youth teams, where loyalty and honesty are salient. We found that, in accordance with previous literature (e.g., Pascual-Ezama et al., 2015), the vast majority of subjects in our sample do not lie, even though cheating provides higher material payoffs. This result holds across treatments. On the other hand, the way in which we manipulated the conditions provides evidence of an important phenomenon: cheating increases when the decision to cheat is disclosed to other team members, although the beneficiary of the lie does not seem to make a significant difference.

Our adolescent subjects keep their integrity when their decision remains private, while some of them abandon it when they know the decision will be revealed to other patrol members. For these, we argue that, somehow, *lies have long legs:* reporting the higher payoff to the team, even at the cost of lying, increases the self-image and thus renders these subjects more attractive. This is a novel and, to some extent, counterintuitive result, as previous papers that introduced some form of public scrutiny reported a reduction in cheating (Houser et al., 2016; Gneezy et al., 2018) or no effect on cheating at all (Mazar et al., 2008; Belot and Schröder, 2013; Van de Ven and Villeval, 2015). On the other hand, our public scrutiny is confined only to the members of a peer group of adolescents; a vast body of literature in social and developmental psychology, as well as criminology and sociology, has studied the complex effects of peer interactions on antisocial behavior (Gordon et al., 2004; Monahan et al., 2009; Brechwald and Prinstein, 2011). Our evidence may suggest that such peer effects favoring antisocial behavior might also be at play in this controlled group of subjects. In a nutshell, our paper seems to offer some support to Collodi's tale, where the Talking Cricket, who is an allegory of Pinocchio's own conscience, always advises

good behavior, while the Fox, the Cat, and Candlewick, which are clearly the "bad company," get Pinocchio into trouble. Taken together, our results cast doubts on the common faith in public scrutiny as a way to promote ethical behavior, especially among young peers.

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A Information on Scouting

"The Mission of Scouting is to contribute to the education of young people, through a value system based on the Scout Promise and Law, to help build a better world where people are self-fulfilled as individuals and play a constructive role in society."[15] The scout promise, law, and method are substantially shared by all scouts worldwide. Scout troops are characterized by shared social norms, homogeneous distribution of age, and a clear distinction of the individual roles within the patrol. All members of the Scout Movement worldwide are required to adhere to the Scout Promise and Scout Law. The wording may vary in different National Scout Organizations as appropriate to the local culture, but they are all based on the Promise and Law originally conceived by the founder of the Scout movement, Robert Baden-Powell: *" On my honor I promise that I will do my best to do my duty to God and to my Country, to help other people at all times, to obey the Scout Law".* In all countries, the first two articles of the Scout Law comprise some variation of the following texts: *"A Scout's honor is to be trusted"* and *"a Scout is loyal."*[16] The leading element of the scout method is the patrol (or team) system, the basic organizational structure in scouting. Each patrol, normally comprising six to eight youths, operates as a team with one member acting as the team leader. Within each team and in ways appropriate to their capacities, the scouts organize their life, sharing responsibilities, making decisions, setting up, carrying out, and evaluating their activities, and assembling and maintaining materials required for such activities. During the summer camp, an implicit competition between patrols takes place. The aim of this competition, which is intended to be both fun and educational, is to instill in each member the awareness that the honor of his patrol depends in some degree on his own ability to play the game.

B Additional results

Table 4 provides the equivalent of Table 3 estimated through OLS.

C Experimental instructions

GENERAL INSTRUCTIONS[17]

[15] https://www.scout.org/mission Accessed on November 8, 2017.

[16] A comprehensive list of national scout laws is available on Wikipedia at http://en.wikipedia.org/wiki/List_of_Scout_Laws_by_country. Accessed on November 11, 2017.

[17] Note: The main text reported below shows Individual Payoff instructions. Team Payoff instructions differ from Individual Payoff instructions. The substantial differences are reported in the text below in ***bold and italic***.

Table 4: OLS results

	(1) decision	(2) decision	(3) decision	(4) decision	(5) decision
DecisionDisclosed	0.097**	0.088	0.117**	0.071	0.075
	(0.047)	(0.069)	(0.050)	(0.073)	(0.074)
PatrolPayment	-0.009	-0.019	0.005	-0.039	-0.045
	(0.061)	(0.084)	(0.060)	(0.080)	(0.080)
Interaction		0.019		0.087	0.088
		(0.094)		(0.100)	(0.103)
Sex			-0.082	-0.082	-0.080
			(0.061)	(0.061)	(0.059)
Old			-0.104	-0.105	-0.102
			(0.069)	(0.069)	(0.065)
Risk			0.059	0.059	0.072**
			(0.037)	(0.037)	(0.034)
Extraversion (big_1)			0.014*	0.014*	0.014*
			(0.008)	(0.008)	(0.008)
Agreeableness (big_2)			0.014	0.014	0.013
			(0.014)	(0.014)	(0.015)
Conscientiousness (big_3)			0.003	0.003	0.001
			(0.011)	(0.011)	(0.011)
Neuroticism (big_4)			-0.003	-0.003	0.005
			(0.011)	(0.011)	(0.010)
Openness to experience (big_5)			0.007	0.007	0.002
			(0.014)	(0.014)	(0.014)
Happy					0.033**
					(0.015)
_cons	0.495***	0.500***	0.292*	0.316**	0.006
	(0.045)	(0.057)	(0.147)	(0.144)	(0.166)
N	315	315	283	283	277

Note: Analogous to Table 3 estimated with OLS. Dependent variable is x_i. Clustered (at the patrol level) standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Thank you for your participation in this activity. There will be two phases, in which you will make decisions following the instructions we will give you. You will then be requested to complete a questionnaire. The study will last a maximum of two hours. The procedures we use will not allow us to discover who made what decision, so the anonymity of the decisions is guaranteed. During the activity, you will be assigned a totem and we will refer to this to identify you. We will never be able to associate your name to the totem (nor are we interested in doing so). If you have any questions about the procedures, please do not hesitate to request further explanation. For the entire duration of the activity and the questionnaire, we ask you not to communicate with anyone, unless requested to do so by the procedures. Those who break these rules will be asked to leave the experiment. You will start by extracting an envelope containing three squares: a yellow one, a blue one, and a white one. The same totem is written on all of them; this will become your identity during the activity. In addition to the totem, the yellow and blue squares both have two boxes on them, one labeled "€0" and the other labeled "€10"; they will be collected during the activity. You can keep the white square as a reminder of your totem. Your choices during the activity will determine the value of the voucher you will receive, to be spent at the cooperative "il Bivacco." At the end of the activity, you will find these vouchers in a basket, inside an envelope addressed to your totem. Now you can turn the page.

SPECIFIC INSTRUCTIONS

Together, we will read through all the steps of this procedure one time. You will then perform the activity individually, following these instructions step by step.

1. At the entrance of the tent, you will receive an envelope containing four pairs of triangular cards. Every pair comprises a blue triangle and a yellow one. The four pairs of triangles are marked as follows:
   - 1st pair: yellow "€0" and blue "€0";
   - 2nd pair: yellow "€10" and blue "€0";
   - 3rd pair: yellow "€0" and blue "€10";
   - 4th pair: yellow "€10" and blue "€10".
2. Draw a pair at random, and put it in your pocket.
3. Throw the remaining pairs in the bin and enter the tent. The contents of the bin will be burned in the bonfire tonight.
4. Separate the yellow triangle from the blue one.

5. On the yellow square, use the pen to tick the amount you see on the yellow triangle; on the blue square, tick the amount you see on the blue triangle. The two amounts you tick are important, because one of the two will determine the value of the vouchers you will receive individually at the end of the experiment ***(because one of the two will determine the value of the voucher that will be delivered to your team at the end of the experiment.)***
6. Fold the yellow square in quarters and put it in the yellow box.
7. Put the blue triangle and the blue square in your pocket.
8. Exit the tent and throw the yellow triangle into the basket.
9. When everybody finishes the experiment, the yellow box will be sealed and brought out of the tent.
10. One team at time goes into the tent and gets in a circle.
11. Then, all the members of the team do the following together:
    (a) Take out their blue triangles and put them in the center of the circle.
    (b) Take out their blue square and attach it with the scotch tape to a sheet of paper.
    (c) Fold the sheet of paper and insert it in the blue box.
    (d) Collect the blue triangles and throw them into the bin when exiting the tent.
12. When all teams are done, the blue box will be sealed and brought out of the tent.
13. A coin will be flipped. If heads result, the yellow box will be chosen; if tails result, the blue one it will be chosen.

If the yellow box is chosen, the value of the voucher that will be given to you individually ***(to your team)*** at the end of the experiment will be determined by what is written on the yellow square. What is written on the blue square will have no value.

If the blue box is chosen, the value of the voucher that will be given to you individually ***(to your team)*** at the end of the experiment will be determined by what is written on the blue square. What is written on the yellow square will have no value. If you have any questions, please ask them now before starting the activity.

C.1 Questionnaire

- Assigned totem:
- Year of birth:
- Place of birth:
- Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?
  ☐ Yes ☐ No (you can't be too careful)

  [Each of the following six questions was followed by check boxes with numbers from 0–10]
- From 0 to 10, how much do you tend to trust people in general?
- From 0 to 10, how much do you tend to trust members of your troop?
- From 0 to 10, how much do you tend to trust members of your patrol?
- From 0 to 10, how much do you agree that most people would try to take advantage of you if they had the chance?
- From 0 to 10, how much do you agree that most of the time people try to be helpful?
- Taking all things together, how happy would you say you are?

- Was your father born in Italy? ☐ Yes ☐ No
- Was your mother born in Italy? ☐ Yes ☐ No
- How many people are in your family, including you?
- For each of the following groups of people, how willing would you be to break the rules in order to improve their state?

  [Each of the following items was followed by check boxes with numbers from 1–4]

  - Your family
  - Your neighbors
  - Someone you know well
  - Someone you meet for the first time
  - Yourself
  - Someone of a different religion than yours

- Someone of a different nationality than yours
- Your patrol

- Please read the following personality traits and rate how well each pair of adjectives describes you. Even if you think that one characteristic describes you better than the other, using the following scale:

  [A 7-item Likert scale was used. Each of the following items was followed by check boxes with numbers from 1–7.]

  1. extroverted, exuberant
  2. difficult, adversarial
  3. trustworthy, self-disciplined
  4. worried, anxious
  5. open to new experiences, with many interests
  6. reserved, silent
  7. understanding, affectionate
  8. disorganized, absent-minded
  9. calm, emotionally stable
  10. traditionalist, routine-bound

- For each of the following statements, please indicate the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from Extremely Unlikely to Extremely Likely, using the following scale:

  [A 7-item Likert scale was used. Each of the following items was followed by check boxes with numbers from 1–7.]

  1. Going down a ski run that is beyond your ability. *[Recreational]*
  2. Investing 10% of your annual income in a start-up. *[Financial]*
  3. Betting a day's income on the outcome of a sporting event. *[Financial]*
  4. Revealing a friend's secret to someone else. *[Ethical]*
  5. Riding a motorcycle without a helmet. *[Health/Safety]*
  6. Speaking your mind about an unpopular issue in a patrol meeting. *[Social]*
  7. Bungee jumping off a tall bridge. *[Recreational]*
  8. Walking home alone at night in an unsafe area of town. *[Health/Safety]*
  9. Moving to a city far away from your parents. *[Social]*
  10. Not returning a wallet you found that contains €200. *[Ethical]*