Journal of Economic Psychology xxx (2013) xxx–xxx

Contents lists available at SciVerse ScienceDirect

Journal of Economic Psychology

journal homepage: www.elsevier.com/locate/joep

Tax evasion and emotions: An empirical test of re-integrative shaming theory

Giorgio Coricelli [a,b,c,*], Elena Rusconi [d,c], Marie Claire Villeval [b]

[a] Department of Economics, University of Southern California, 3620 South Vermont Avenue, Los Angeles, CA 90089-0253, USA
[b] University of Lyon, Lyon F-69007, France; CNRS, GATE, 93, Chemin de Mouilles Ecully, F-69130, France, IZA, Bonn D-53113, Germany
[c] University of Trento, Center for Mind/Brain Sciences (CIMeC), Via Delle Regole 101, 38100 Mattarello (TN), Italy
[d] University College London, Institute of Cognitive Neuroscience, 17 Queen Square, WC1N 3AR, London, UK

ARTICLE INFO

Article history:
Available online xxxx

JEL classification:
H26
C91

PsycINFO classification:
Motivation and emotion 2360

Keywords:
Tax evasion
Moral emotions
Shaming theory
Cheating behavior
Experiment

ABSTRACT

Shaming can be either of two types, shaming that becomes stigmatization of the offender and favors his exclusion from the community, or shaming that is followed by forgiveness and reintegration of the deviant. Here we test experimentally these aspects of shaming theory with a repeated tax-payment game, in which the shaming "ritual" consisted of displaying the evader's picture in addition to charging monetary sanctions. Results show that when cheating is made public and the contravener is not successively reintegrated, the total amount of cheating is significantly increased compared to when cheating is made public but publicity is immediately followed by reintegration. The former condition is associated with more intense negative emotions related to cheating. This suggests that the employment of a social shaming mechanism may be an effective, albeit very sensitive, tool in the hands of policy makers.

'Cultural commitments to shaming are the key to controlling all types of crime. However, for all types of crime, shaming runs the risk of counterproductivity when it shades into stigmatization.'
J. Braithwaite – *Crime, Shame and Reintegration* (1989)

1. Introduction

Shame is a self-conscious emotion that can act as a force for social conformity and social cohesion (Lewis, 1992). The anticipation of shame, or shame avoidance, is thought to motivate the individual to accept his/her responsibility for the welfare of the group (de Hooge, Breugelmans, & Zeelenberg, 2008; Lewis, 1971; Tomkins, 1962). In criminological literature, shaming refers to 'all social means of expressing disapproval with the intention of invoking remorse in the person being shamed and/or condemnation by others who become aware of shaming' (Braithwaite, 1989). Shaming can be either of two types: shaming that becomes stigmatization of the offender and his exclusion from the society of law-abiding

* Corresponding author at: Department of Economics, University of Southern California, 3620 South Vermont Avenue, Los Angeles, CA 90089-0253, USA. Tel.: +1 (213) 740 2432; fax: +1 (213) 740 8543.
E-mail addresses: giorgio.coricelli@usc.edu (G. Coricelli), e.rusconi@ucl.ac.uk (E. Rusconi), villeval@gate.cnrs.fr (M.C. Villeval).

0167-4870/$ - see front matter © 2012 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.joep.2012.12.002

citizens, and shaming that is followed by forgiveness and reintegration of the offender. According to Braithwaite (1989), the most effective form of shaming is not usually applied from the State but occurs in micro-groups of interdependent people. Re-integrative shaming would lead to lower crime rates, with disapproval dispensed without eliciting rejection by the disapprovers or dismantling potentialities for future disapproval. Stigmatization, instead, would make criminal subcultures, that reject the rejectors, more attractive. One powerful means of stigmatization, is labeling (Becker, 1963). When a negative label gets applied to an individual who has supposedly broken any socially accepted rule, it becomes part of the individual's identity, and from then on he/she is 'apt to employ his/her deviant behavior or a role based upon it as a means of defense, attack, or adjustment to the problem created by the societal reaction' (see Lemert, 2002). A label applied after 'primarily deviant' behavior may thus become a key aspect of the individual's identity, and prompt 'secondarily deviant' behavior.

In tax law enforcement, for example, it is well known that deterrence-based enforcement strategies, especially when perceived as unfair according to self-reports, can cause a paradoxical reaction or intention of future resistance to compliance and disrespect for the law (e.g. Murphy, 2008; Murphy & Harris, 2007). Here, we aimed to test the predictions of shaming theory in a controlled white-collar crime context with an experimental tax-payment game.

The importance of shame and more generally of emotions in tax compliance has been almost unexplored. The standard economics-of-crime model formulated by Allingham and Sandmo (1972) and Yitzhaki (1974) has inspired many empirical tests (see Alm, 1991; Cowell, 1990; Andreoni et al., 1998; Elffers, 1991; Slemrod, 2007 for surveys). If these tests confirm the basic mechanisms of the deterrence models, they however reveal much more compliance than predicted. Relaxing the hypothesis of risk neutrality and assuming risk aversion is not sufficient to explain the level of compliance observed in empirical settings (Bayer & Sutter, 2009). This has motivated the exploration of other dimensions of tax compliance, such as the heuristics and biases that lead individuals to overweight small audit probabilities (Alm, McClelland, & Schulze, 1992), or the importance of equity and the role of voting on the use of taxes (Pommerehne et al., 1994). The role of tax morale (Cummings, Martinez-Vazquez, McKee, & Torgler, 2009; Kirchler, 2007; Torgler, 2002), ethics, social norms and social interactions has been investigated more recently (Fortin, Lacroix, & Villeval, 2007; Lefebvre, Pestieau, Riedl, & Villeval, 2011; Myles & Naylor, 1996). Civic norms (Slemrod, 1998), moral appeals (Blumenthal, Christian, & Slemrod, 2001; Schwartz & Orleans, 1967), or expectation of collective blame (Bosco & Mittone, 1997) have been shown to exert contrasted influence on tax compliance without, however, fully explaining it. In this paper, we investigate a new hypothesis by considering that our understanding of tax compliance can be improved by analyzing the role of emotions in dynamic settings.

Our expectation is that both income reporting and audit, possibly followed by sanctions, elicit emotions in individuals. We assume that emotions do not simply proxy the psychic cost of evading taxes; they also constitute a driving force of behavior (Zeelenberg, 2007). In other words, the emotions associated with income reporting, audit, and sanctions can influence further compliance. Various emotions might be related with the act of evading taxes and its consequences. Indeed, moral emotions might signal violations of social norms (Thøgersen, 2006; Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008; de Hooge et al., 2008). For instance, the evader might feel guilty (Fessler & Haley, 2003; Tangney, 1991) for not helping needy people in the community, or feel ashamed (Keltner & Buswell, 1996) if caught evading taxes and publicly denounced (Haidt, 2003; Tangney & Dearing, 2002). The experience of guilt is commonly associated to pro-social behavior motivated by reparatory acts (Roseman, Wiest, & Swartz, 1994; Tangney, Miller, Flicker, & Barlow, 1996). For its part, shame may motivate withdrawal and avoidance of social interactions (Tangney et al., 1996). Moreover, underreporting income may generate anticipatory and anticipated emotions (Lowenstein, Hsee, Weber, & Welch, 2001). Indeed, evaders may experience anticipatory emotions when taking the risk of reporting less than requested and these risk-related anticipatory emotions are likely to increase with the level of tax evasion. Moreover, evaders may experience anticipated emotions when thinking of how bad they will feel if audited and punished. We expect that the intensity of the emotions related to the detection of cheating differs according to the publicity of this information, due to shaming. Indeed, shaming could amplify moral emotions (Izard, 1977; Sabini & Silver, 1997) related to the violations of a norm (e.g., tax evasion), and affect social behavior (e.g. tax compliance) (Ahmed & Braithwaite, 2004; Amodio, Devine, & Harmon-Jones, 2007; Murphy & Harris, 2007).

Two recent studies investigated directly the role of emotions on tax compliance (Coricelli, Joffily, Montmarquette, & Villeval, 2010, and Maciejovsky, Schwarzenberger, & Kirchler, 2011). Coricelli et al. (2010) measured skin conductance responses (SCRs) and self reported emotional arousal and valence in a tax evasion experimental task. They found higher SCR when participants evaded, and higher arousal and negative affects associated with being audited. A treatment in which the pictures of evaders were publicly displayed few seconds at the end of the period favored compliance. The decision to evade and the proportion of evaded income were related to the anticipation and the experience of emotional responses. Maciejovsky et al. (2011) investigated how the interplay between cognition and emotion affects tax ethics. They found an interaction effect of cognitive and emotional priming to moral judgments related to tax evasion. This study also shows how the effectiveness of economic variables, such as audit probabilities and the amount of the fines, is influenced by affect.

The originality of our experimental protocol consists of manipulating the risk of being publicly exposed for underreporting. Our shaming "ritual" consists of showing the picture of the evader in addition to a monetary sanction (similarly to Coricelli et al. (2010)). In the so-called Pardon treatment, shaming was followed by reintegration: after having his picture displayed, the evader was fully reintegrated in the group (i.e. his picture disappeared from the screens, like in Coricelli

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

et al., 2010).[1] In contrast, in the so-called Stigma treatment, shaming was followed by stigmatization, where expiation never ended. Indeed, the evader's picture was publicly displayed for the rest of an "experimental life"; as a consequence, the individual was permanently labeled a cheater for an entire sequence. Our laboratory experiment thus complements these previous studies (Coricelli et al., 2010; and Maciejovsky et al., 2011). Indeed, Coricelli et al. (2010) found that there was a beneficial effect of showing the picture of evaders but only one type of shaming was introduced; the current study aims to investigate the dynamics of shaming and to better specify that previous result. Here, we investigate how the duration of public exposure in case of detection affects the behavior and emotional responses related to tax evasion in a dynamic setting. In addition, in this paper we introduce psychological measures of moral emotions.

Reporting behavior should be similar in both treatments as the parameters of the game, such as audit probabilities, tax rate and income levels, were the same. The reason why behavior was expected to differ between treatments is the prospect and the experience of stigmatization. Indeed, lower levels of evasion were expected in the Pardon treatment, as a consequence of reintegration in the group after being caught cheating. Higher levels of evasion were expected after the first evasion in the Stigma treatment, since once the feeling of shame has been experienced, compliance would not change the evader's status. Such anticipated and experienced emotional consequences should be the main determinants of treatment effects on decisions and affective self-reports.

Our main findings show that, indeed, when cheating is made public but the contravener is successively reintegrated, the total amount of cheating is significantly reduced compared to when cheating is made public and publicity is not immediately followed by reintegration. The latter condition is associated with more intense negative emotions related to cheating. This suggests that the employment of a social shaming mechanism may be an effective, albeit very sensitive, tool in the hands of policy makers.

The remainder of this paper is organized as follows. Section 2 presents the experimental materials and methods. Section 3 reports the experimental results. Section 4 discusses these results and concludes.

2. Materials and methods

2.1. Participants

Our experiment was conducted at the Groupe d'Analyse et de Théorie Economique (GATE), CNRS, France. 32 participants (mean age: 23; SD: 6.6), 16 for each session, were recruited from undergraduate courses in local Engineering and Business schools, by means of the ORSEE software (Greiner, 2004). The experiment was computerized using the REGATE program (Zeiliger, 2000).

2.2. Design

The experiment consists of two treatments: the Sigma treatment and the Pardon treatment (see Fig. 1 and instructions in Appendix A). The Pardon treatment is characterized as follows. The experimental game involves groups of eight players who receive individual incomes, which can take one of the following values: I {50, 100, 150, 200}. Each income level is randomly assigned to two players in each period but this is not common information. Players are requested to pay a uniform tax rate on their income (55%) and they are asked to report their income. Income is reported by means of a scrollbar, whose maximum graduation corresponds to the player's actual income (i.e., players cannot report more than their actual income), and players are told that paybacks will go into scientific research funds. The scrollbar was implemented to allow comparability with previous research in which the same method was adopted.

Subjects know that their reported income can be audited according to a cut-off audit scheme, which will entail the payment of a fine if the reported income is less than actual income. As in Coricelli et al. (2010), players know that the probability of an audit is endogenous and it depends on the group median report. If a player's reported income is among the four highest reported incomes, his audit probability is 35%. If his reported income is among the four lowest reported incomes, his audit probability is 65%. If all players report the same amount, the audit probability is uniform and equal to 50%. The reason why low-reported-income players have higher probability of being audited is because reporting low incomes signals to tax authorities (who know the income distribution) that the individual might have underreported by a substantial amount.

This endogenous audit mechanism could have potentially generated coordination among participants. However, coordination on the equilibrium –even when it is unique- is in general difficult (see, Alm & McKee, 2004), and particularly so in our experimental setting due to (i) the size of the group (eight participants), (ii) the median income rule that we implemented, and (iii) the limited feedback information provided at the end of each trial.

[1] There are other differences with the design used in Coricelli et al. (2010). In particular, here we introduce sequences of various lengths in which players remain in the same group; at the beginning of each sequence, groups are rematched, so that if somebody was publicly exposed in his previous group, his "reputation" is restored in his new group. Moreover, in this experiment we use a between-subject design. Coricelli et al. (2010) used a within-subject design and players remained in the same groups for the 30 periods of the game. Therefore, the picture treatment of Coricelli et al. (2010) is relatively close to our Pardon treatment, except that since players remained in the same group throughout the game they could remember that a detected cheater in a period already evaded in the past. Our rematching procedure limits this effect.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

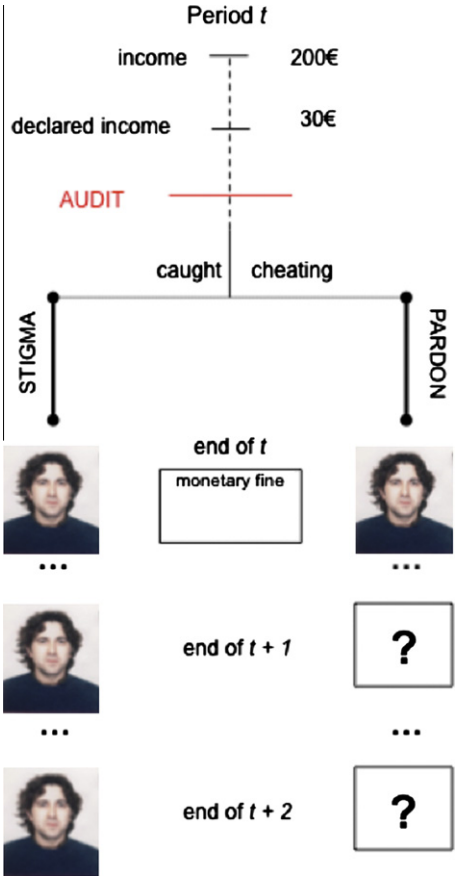

Fig. 1. Sequence of events in *t* and different consequences of cheating in the two treatments (Stigma vs. Pardon). *Note*: In the Stigma treatment, if an audit reveals that a player has underreported his income, his picture is displayed on his own screen and on the screen of other taxpayers for the remainder of the current sequence of periods. In the same situation in the Pardon treatment, the picture is displayed only in the current period.

Payoffs are determined as follows. If the player is not audited, his payoff consists of his net income (i.e. income minus the tax on reported income). If the player is audited and he has underreported his income, he has to pay the tax on his actual income and a fine is charged. As in Yitzhaki's (1974) deterrence model, the fine is proportional to the unpaid taxes and it is fixed at 20%. In addition, his picture is displayed on his own screen and on the screen of the other taxpayers for the specific period in which he has been audited and caught cheating. In each period, only one picture can be displayed on the screen of any subject; if more than one tax evader was audited, there is a random display of each picture on the screen of non-audited players and honest taxpayers. Displaying only one picture at a time does not allow the players to identify precisely the number of evaders in the group. This also means that a player who is caught cheating does not know if there were other cheaters and how many players can see his picture, but he is certain that his own picture is displayed. The extent of evasion is not displayed since it could be an additional source of influence on individual decisions.

The Stigma treatment follows the same sequence as the Pardon treatment: players receive their income; they report an income; and after the audit has been realized, they are informed on whether they have been audited; then, payoffs for the period are computed. In contrast with the Pardon treatment, the pictures of the contraveners who have been caught are displayed on their own screen and on the screen of other taxpayers for the remainder of an entire sequence of periods. As in the Pardon treatment, at the end of each period only one picture can be displayed on the screen of any subject; if more than one tax evader has been audited, each picture is still displayed but on fewer screens.

To avoid possible carry-over effects, a between-subject design was used. An experimental session consisted of 30 periods, divided into three blocks with a variable number of periods (6, 14 and 10 periods, respectively). The number of sequences and the number of periods in the three blocks were held constant in both treatments and kept unknown. Two groups of eight participants were formed in each session. At the beginning of each new sequence, the composition of groups was reshuffled, such that reputation could be restored at the beginning of a new sequence.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

2.3. Procedures

Upon arrival, subjects were asked whether a picture of their face could be taken (all accepted). It was made explicit that this picture would be used during the experiment and that they could quit immediately against the payment of the show-up fee (€3). Participants received also the guarantee that their picture would be immediately destroyed at the end of the session and they could witness its destruction, if they wanted to. They were required to keep a neutral face while their picture was taken. Next, each participant was allowed to sit in front of a computer. Instructions were distributed and read aloud and understanding of the rules was checked. In a preliminary part, risk attitudes were probed; however, since they did not influence behavior in either treatment, these data are not reported.

Risk elicitation was elicited at the beginning of the session, following a procedure similar to Charness and Gneezy (2010). Each subject received an endowment of 15 points and had to choose how much to invest in a risky asset and how much to keep for himself. This amount was lost if the investment failed; in case of a success, the investment returned 2.5 times this amount. It was common knowledge that the investment had a 50% chance to be a success. The subjects received no feedback on the success or failure of their investment before the end of the session, in order not to influence their further decisions. In addition, affective self-reports were collected at the end of each period to assess emotional arousal (low–high intensity, on a Likert-type scale from 0 to 7) and hedonic valence (negative-positive, on a Likert-type scale from 0 to 7). The short version of TOSCA-3 (Test of Self-Conscious Affect – Version 3; Tangney, Dearing, Wagner, & Gramzow, 2000) was administered at the end of the sessions. TOSCA-3 yields indices of shame-proneness, guilt-proneness, externalization, and detachment that can be related to cheating behavior. For each of its 11 scenarios, players had to indicate on a 1-to-5 scale how likely they would be to react in each of four ways described to them. They were paid an additional €2 to answer these questions. On average, participants earned €23.44. They were paid in private in a separate room.

2.4. Data analysis

Kruskal–Wallis equality of populations rank tests were performed to identify differences between treatments for each variable of interest; two-sample Wilcoxon rank-sum tests (Mann–Whitney *U*-tests) were performed to identify specific sources of difference; and Kolmogorov–Smirnov tests compared the distributions of decisions in the Pardon and the Stigma treatments. An additional analysis was conducted considering a comparison between these two treatments described above and a benchmark treatment with identical audit probabilities and tax rate but without the picture manipulation (data from Coricelli et al., 2010).

Next, we estimated a random-effects Probit model to analyze the determinants of the probability to cheat. The use of random effects is justified since the same players made repeated decisions in 30 periods. In Model (1) in Table 1, the dependent binary variable is the decision to under-report income. The independent variable *Stigma treatment* takes value 1 if the data are from the Stigma treatment and 0 if the data are from the Pardon treatment. We interacted this treatment variable with the time taken by the subject to make his decision (*Stigma* $*$ *decision time*). The *picture in t–1* variable is coded 1 if the player's picture has been displayed in the previous period and 0 otherwise. The *stigma* $*$ *picture in t–1* variable interacts the previous variable with the Stigma treatment to check whether the impact of picture dissemination differs in this treatment. I*ncome* indicates the actual level of income. The independent variables also include a *period* variable that takes the value of each trial number; this variable is also interacted with the Stigma treatment to test whether the time trend differs across treatments (*stigma* $*$ *period*). Since we have included lagged variables, the first period of each sequence is dropped. The independent variables also include the player's gender (*male*) and four individual indices from the TOSCA-3: *shame proneness, guilt-proneness, detachment* and *externalization*. In Table 1, we report the marginal effects of each of these independent variables.

We also estimated a random-effects Tobit model. In this model, the independent variable is the intensity of cheating, given by the proportion of evaded income [(income – declared income)/income]. The Tobit model is justified because data are censored at zero (full compliance). The parameters were estimated by maximum likelihood. Model (2) was estimated on the subsample of players who evaded in the previous period and have been caught. Model (3) was estimated on the subsample of players who evaded in the previous period but who have not been caught. The independent variables are the same as in model (1), except that the picture variables have been excluded.[2] Table 1 reports the value of the coefficients of these independent variables.

Moreover, we estimated alternative Probit and Tobit models in which, instead of using random effects, we clusterized robust standard errors at the individual level. Results were qualitatively similar to those reported in Table 1.

3. Results

Compared to the Stigma treatment, an environment where cheating is made public and publicity immediately followed by reintegration (Pardon treatment) reduces evasion. The average proportion evaded is 40.32% in the Stigma treatment and

[2] We also tested specifications in which the independent variables also included the amount invested in the risky investment at the beginning of the game, the intensity of feelings and the hedonic valence of feelings self-reported in the previous period. Since none of these variables was ever significant, we do not report these specifications.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

Table 1
Determinants of the probability of evading taxes and of the intensity of evasion.

Dependent variables	Probability of evading (1)	Intensity of evasion in t when an evader in t-1 has been	
		Caught (2)	Not caught (3)
Stigma	−2.434***	29.304**	1.018
	(0.676)	(13.863)	(11.609)
Picture in $t-1$	−0.494**	–	–
	(0.227)		
Stigma * picture in $t-1$	1.229***	–	–
	(0.334)		
Stigma * decision time	0.071***	−1.453***	0.014
	(0.021)	(0.565)	(0.479)
Period	−0.020**	0.340	−0.514**
	(0.010)	(0.290)	(0.242)
Stigma * period	0.036**	−0.292	0.101
	(0.016)	(0.419)	(0.362)
Income	0.013***	0.199***	0.119***
	(0.001)	(0.032)	(0.028)
Male	1.758**	10.430	14.564
	(0.744)	(11.612)	(9.904)
Shame proneness	−0.054	−1.384*	−1.473**
	(0.048)	(0.820)	(0.716)
Guilt proneness	0.003	−0.368	0.093
	(0.062)	(1.018)	(0.873)
Detachment	0.092	1.901#	0.921
	(0.062)	(1.202)	(1.036)
Externalization	0.061	0.309	0.648
	(0.059)	(0.978)	(0.860)
Constant	–	−14.065	21.190
		(63.029)	(54.278)
Nb observations	864	292	277
Censored observations	–	50	43
Log likelihood	−285.025	−1228.635	−1137.248
Wald Chi^2	119.70	58.97	38.79
$p > Chi^2$	<0.001	<0.001	<0.001

Note: Model (1) is a random-effects Probit model; models (2) and (3) are random-effects Tobit models. In model (1), numbers indicate marginal effects and standard errors in parentheses. In models (2) and (3), numbers indicate coefficient values and standard errors in parentheses.
* At the 0.10 level.
** At the 0.05 level.
*** Indicate significance at the 0.01 level.
# At the 0.12 level.

31.89% in the Pardon treatment [Kruskal–Wallis equality-of-populations rank test (K–W), $Chi^2 = 8.615$, $p = 0.003$]. The average proportion evaded in the Stigma treatment is not significantly different compared to a Benchmark treatment (from Coricelli et al. (2010)) without picture manipulation in which the mean proportion evaded was 39.30% (M–W, $z = 0.44$, $p = 0.660$). In contrast, the Pardon treatment generated higher levels of compliance than this Benchmark treatment (M–W, $z = 4.14$, $p < 0.001$).

In general, the proportion of evaded income increases with the level of income [Spearman's rank correlation coefficient, $rho = -0.19$, $p < 0.001$]. For each income level, however, the proportion of evaded income is higher in the Stigma treatment (and significantly so in two of the four income levels [for 100 and 200, $p < 0.05$, Mann–Whitney tests (M–W)]).

Since this difference between treatments could well reflect a sampling bias, it is important to look at its time course, and check whether the group receiving the Stigma treatment reports less income since the beginning of the experiment. Fig. 2 displays the evolution of the proportion of evaded income by treatment over time. In the initial phase (first 2 periods, M–W, $z = 2.0$, $p = 0.040$) the Stigma treatment seems to deter participants from evading much more than the Pardon treatment (in the first two periods, the proportion of evaders is 62.5% in the Stigma treatment and 81.25% in the Pardon treatment. However, after the first instances of evasion have occurred, the Stigma treatment loses all its advantage over the Pardon treatment and, in fact, gives way to higher levels of cheating behavior and instability (Kolmogorov–Smirnov test for equality of distribution functions of the proportion of reported income between the two treatments: $D = 0.1958$, $p < 0.001$; last 20 periods). This makes it very unlikely that the difference between Stigma and Pardon treatments could be explained away by sampling bias. More likely, the treatment itself is influencing reporting behavior.

Evaders took less time to decide in the Stigma than in the Pardon treatment (evaders take on average 15.45 s to decide in the Stigma treatment and 25.81 in the Pardon treatment; M–W, $z = 2.35$, $p < 0.05$), whereas non-evaders showed identical decision times in the two groups over the 30 periods (10.58 s and 9.33, respectively; M–W, $z = -0.45$, $p = 0.650$).[3]

[3] In the Benchmark treatment taken from Coricelli et al. (2010), the average decision time was 13.51 s for the evaders and 9.73 for the non-evaders.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

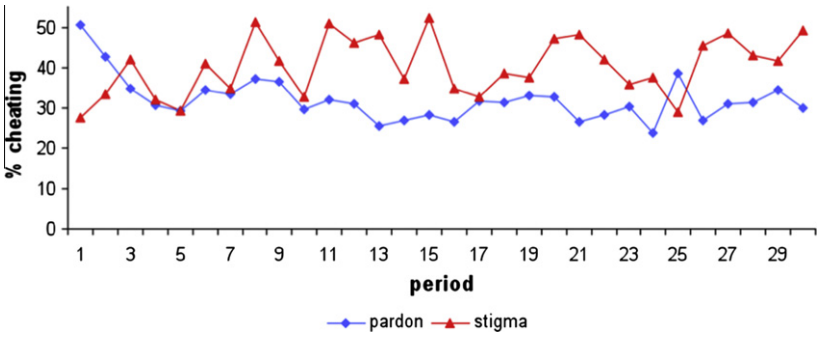

Fig. 2. Evolution of the mean percentage of evaded income by treatment over time.

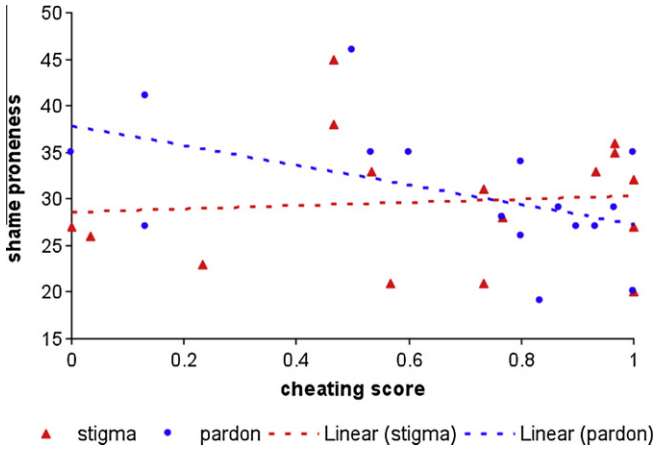

Fig. 3. Correlation between scores on the TOSCA-3 shame proneness scale and the proportion of periods with evasion for each player.

Finally, emotional responses experienced in the Stigma treatment tend to become more intense than those experienced in the Pardon treatment over time, despite initially similar levels between the two groups (Kolmogorov–Smirnov test for equality of distribution functions: $D = 0.5333$, $p < 0.001$). The average self-reported intensity of emotions is 3.96 in the Stigma treatment and 3.55 in the Pardon treatment; for the sole evaders, the corresponding values are 4.48 and 4.06. Overall, feelings are more intense in evaders (M–W, $z = -12.781$, $p < 0.001$). Evaders who were not caught in the current period (or before the Stigma), that is evaders who did not see their own picture on the screen, reported more positive feelings than those who complied (non-caught evaders: 5.18 vs. honest: 4.11; M–W, $z = -3.492$, $p < 0.001$; evaluated on a scale where 1 is very negative, 4 neutral, and 7 very positive). As expected, evaders who did see their own picture reported more negative feelings (on average, a score of 3.40) than those who did not evade (4.11) or did not see their picture (5.18) (caught evaders vs. non-evaders: M–W, $z = -6.340$, $p < 0.0001$; caught evaders vs. non-caught evaders: M–W, $z = -2.334$, $p = 0.020$).

Interesting interactions emerged between treatments and dispositions measured with TOSCA-3.[4] Fig. 3 shows the significant interaction between treatments and shame-proneness on cheating behavior. Shame-proneness is related to law-abiding behavior in the Pardon treatment (Spearman's rank correlation coefficient, $rho = -0.57$, $p = 0.020$, which is consistent with the idea that the Pardon treatment deters via induction of anticipated shame. On the contrary, shame-proneness is unrelated to cheating behavior in the Stigma treatment ($rho = 0.02$, $p = 0.940$).

Finally, Mann–Whitney tests on the proportion of unreported income provide evidence that the two treatments elicit different reactions in those evaders who were caught in a preceding period. The average proportion of unreported income of the subjects who were caught in the previous period, excluding the first period of each sequence, is 55.45% in the Stigma treatment and 46.38% in the Pardon treatment (M–W = 2.890, $p < 0.001$).

[4] The TOSCA-3 measures were collected at the end of the experimental sessions, to avoid priming participants on shame/guilt scenarios. Being dispositional measures, TOSCA-3 scores should not be hugely affected by the preceding experience with the experimental game; however, we acknowledge that possible carry-over effects cannot be discarded.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

To complement these non-parametric statistics, we turn now to the econometric analysis. The regression analysis reported in model (1) in Table 1 investigates the determinants of the probability to evade taxes. It shows that players are initially less likely to evade in the Stigma treatment, possibly because they anticipate negative emotions related with stigmatization. But if the display of their picture after an audit in the previous period reduces the players' likelihood of evading taxes in the Pardon treatment, we observe the opposite effect in the Stigma treatment. This may indicate that there is no repetition avoidance in this treatment possibly because reputation has been lost for the rest of the sequence. In addition, in the Stigma treatment a higher time to make a decision is associated with an increased probability to evade taxes, possibly because detection entails a higher anticipated moral cost in this treatment. The regression also indicates that a higher income increases the probability to cheat and that males are more prone to take the risk of evading taxes (like in Fallan, 1999; Kirchler, 2007; Spicer & Becker, 1980). Finally, those who are more prone to shame or other feelings do not seem more likely to underreport their income. In fact, additional regressions show that shame-proneness influences significantly evasion in the Pardon treatment but not in the Stigma treatment.[5]

Turning to the intensity of evasion, model (2) in Table 1 shows that when evaders in the previous period have been caught, the Stigma treatment produces a larger proportion of unreported income in the current period than the Pardon treatment. This effect is less strong, however, for those who take more time to make their decision in the current period, possibly because they are more hesitant. Shame-proneness reduces significantly the proportion of unreported income in the current period, whereas a higher income increases it. Consistent with the previous analysis, additional regressions show that the impact of shame-proneness is significant only for the evaders in the Pardon treatment, but not for the evaders in the Stigma treatment.[6] This suggests that when the moral sanction is lasting for the whole sequence, shame-proneness is no longer able to discipline individuals.

On the other hand, for evaders who were not caught in the previous period (see model (3) in Table 1), the treatment has no effect on the proportion of evaded income. Shame-proneness still has a negative influence. Separate regressions by treatment show that this variable is only significant in the Pardon treatment (coeff. = −2.551, $p = 0.005$), not in the Stigma treatment (coeff. = −0.716, $p = 0.490$).

4. Discussion and conclusion

Tax compliance may be guided by the willingness to avoid negative emotions raised by potential detection and public denouncement, as shown before by Coricelli et al. (2010) and by our analysis of self-reports on the intensity and hedonic valence of feelings. This suggests that there is a disutility in being labeled as a cheater in a group, although the maximization of one's monetary payoff may rationally motivate tax evasion and although participants can learn over time that there are other evaders in the group. In this experiment, we showed, however, that if an evader is not reintegrated in the group after being identified as a cheater and punished as such, he is more likely to switch to the deviant/utilitarian mode and evades significantly more than when immediately reintegrated after being fined. This might indicate that when an individual is not given the opportunity to restore his reputation, he slips out of the net of emotional social control. In agreement with Braithwaite's theory, our results point against a simplistic application of shaming in a public policy aimed at reducing tax evasion, and suggest that shaming might even exert negative effects by desensitizing evaders and pushing them even further into rule breaking (see also Murphy & Harris, 2007) or even by causing resentment feelings that may lead to actively challenging and game-playing with the law (Murphy, 2008).

The relationship between punishment and compliance also appears to be mediated by some personality traits. Indeed, for a given level of income, a higher shame-proneness score (as measured by TOSCA-3) reduces the likelihood of cheating and the extent of underreporting. Indeed, shame is a negative emotion attacking the entire self; it has the capacity to make us feel 'naked, defeated, alienated, lacking in dignity or worth' (e.g. Tomkins, 1963). In the context of a shaming policy, the interaction between social situational forces and personal forces may therefore exert unpredictably negative effects both for the internal experience of the person being shamed and for its behavioral outcome (Gadd & Jefferson, 2007).

There is wide consensus in the literature on the fact that shame differs from guilt (de Hooge, Zeelenberg, & Breugelmans, 2007). Guilt is a negative emotion restricted to the specific behavior that has been enacted by the self. That is, guilt is free from potentially destructive thinking against the self. That shame-proneness had a part in our participants' reaction during the tax game is shown by the interaction between shame-proneness and the type of decision taken during each period; in contrast, guilt-proneness did not affect behavior. Interestingly, we found that shame-proneness favors compliance but this is significant only in the Pardon treatment. When the detected cheating behavior

[5] We also estimated model (1) for each treatment separately (regressions available upon request). Each point of shame-proneness score reduces by 17.96% the probability of cheating ($p = 0.078$) in the Pardon treatment. Its impact is not significant in the Stigma treatment ($p = 0.922$). Note that the mean shame-proneness score is 30.81 in the Pardon treatment (SD = 6.87; min = 19; max = 46) and 29.75 (SD = 6.72; min = 20; max = 45) in the Stigma treatment. The mean shame-proneness is not significantly different in the two samples (M–W test, $p = 0.663$). Thus, the difference observed does not originate in different individual characteristics of the two samples.

[6] We estimated model (2) for each treatment separately (regressions available upon request). The coefficient of the shame-proneness score is -2.938 ($p = 0.021$) in the Pardon treatment. It is −0.316 ($p = 0.743$) in the Stigma treatment.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

leads to stigmatization in the group, shame-proneness is no longer able to refrain individuals from evading taxes or to limit the amount evaded. It can be inferred that even subtle variations in policy (and therefore in the social context) can interact with individual variables. Gadd and Jefferson (2007) note that 'one person's mild embarrassment is another painful mortification' and highlight the danger of policies entailing the manipulation of social emotions. Braithwaite himself wrote that 'shaming is a dangerous game' (1989). Our study shows that even in a laboratory environment it is possible to alter participants' behavior just by applying two slightly different policies based on the concept of shaming the offender. When shaming turns into stigmatization, compliance is lower than when shaming is followed by reintegration. In conclusion, shaming via public exposure may increase compliance only when carefully administered.

Acknowledgments

This work was supported by a CIMeC Research Fellowship to ER, a grant from the CIBLE program of the Rhone-Alpes Region to Marie Claire Villeval, and ANR and PAT (Provincia Autonoma di Trento) grant to GC. We would like to thank Stephen Parrott, Carol Wain and Michael Wright for stimulating discussions and for their constructive comments on a preliminary version of this manuscript.

Appendix A. Instructions for the Stigma treatment (translated from French)

(Instructions for the Pardon treatment are available upon request)
We thank you for participating in this experiment on decision-making that consists of several parts. During these parts, all transactions are expressed in points, with
100 points = 20 Euro
We will first distribute the rules for the preliminary part; the instructions for the next parts will be distributed later
Your earnings depend on your decisions and on the decisions of other participants. At the end of the session, we will add up your earnings in points in the various parts and they will be converted into Euros
The amount of your earnings will remain confidential. You will be paid in private and in cash in a separate room by a person who is not aware of the content of the experiment

Instructions for the preliminary part
Description of the task
You receive a show-up fee of €3, equivalent to 15 points. We ask you to choose the amount of points (between 0 and 15 points, included) that you are willing to invest on a risky asset. You keep the points that are not invested
The investment
There is a 50% chance that the investment is a success
If the investment is a success, you earn 2.5 times the amount that you have invested
If the investment is not a success, you lose the amount that you have invested
1st example: You invest 0 point. You earn: $(15-0)=15$ points
2nd example: You invest 6 points. If the investment is a success, you earn: $(15-6)+(2.5*6)=24$ points. If the investment is not a success, you earn: $(15-6)+0=9$ points
3rd example: You invest 15 points. I f the investment is a success, you earn: $(15-15)+(2.5*15)=37$ points. If the investment is not a success, you earn: $(15-15)+0=0$
How is the success of the investment determined?
You are required to choose one color, either white or black. At the end of the session, you will have to press a button "random draw" that will appear on your computer screen. The computer program selects randomly one of the two colors
If the randomly drawn color is the color you have chosen, your investment is a success
If the randomly drawn color is not the color you have chosen, your investment is not a success
To sum up: You choose now the amount you are willing to invest; then, you choose a color. At the end of the session, after the other parts have been completed, you will press the random draw button. The computer program will inform you whether the investment is a success and the amount of your earnings for this part. This earning will be added to your earnings of the previous parts
If you have any question regarding these instructions, please raise your hand. Somebody will answer your questions in private. You are not allowed to communicate with the other subjects throughout the session

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

Instructions for the following parts (Distributed after the preliminary stage has been completed)
Part 1

This part consists of several "sequences"
During each sequence, you and seven other participants are randomly allocated to a group. The composition of the group is modified at the beginning of each new sequence
Each "sequence" consists of several "periods". At the end of the session, we will randomly draw two periods in this part. We will calculate the average of your earnings in these two periods and these earnings will be added to the earnings of the other parts
Description of each period
In each period, you have to make one decision
☐ At the beginning of each period, you receive an income. Your income can take the value 50, 100, 150, or 200 points. Your income is selected among these values by the computer program
☐ We ask you to pay a tax on your income. This tax rate is 55%. It is the same for all the participants in this session. The product of the taxes will be used to fund participants to other experiments
To answer this demand, you must report an amount that lies between 0 and the income you have received. The 55% tax rate is applied to the amount you have decided to report. After you have made your choice, you must click the OK button on your screen to validate your decision
☐ The computer program can control your reported income according to a certain audit probability and this audit can entail the payment of a fine.
Your probability of being audited is determined as follows:
• If your reported income is among the 4 lowest reported incomes in the room in the current period, the audit probability is 65%. Therefore, you have 65 chances out of 100 to have your report audited
• If your reported income is among the 4 highest reported incomes in the room in the current period, the audit probability is 35%. Therefore, you have 35 chances out of 100 to have your report audited
If all the participants report the same income, an average audit probability, equal to 50%, is applied to each participant
If an audit is conducted and if it reveals that you have reported an amount lower than your actual income, you have to pay both:
(1) the tax on your actual income, i.e. 55% of your actual income
(2) and a fine, which is determined as explained below

Determination of your payoff in each period

At the end of each period, your **net payoff** is determined as follows. 3 cases may occur
☐ **If your reported income is not audited,** the tax rate is applied to the amount you have reported. Your net payoff is determined according to the following formula:

Net payoff = income – tax
with tax = 55% of the reported income

☐ **If your reported income is audited and if it is equal to your actual income,** the tax rate is also applied to your reported income. Your net payoff is determined according to the following formula:

Net payoff = income – tax
with tax = 55% of the reported income

☐ **If your reported income is audited and if it is lower than your actual income,** the tax rate is applied to your actual income. One subtracts from your payoff a fine that is equal to 20% of the tax on the income that you did not report. Your net payoff is determined according to the following formula:

Net payoff = income – tax – fine
with tax = 55% of the income
and fine = 20% ⟦55% (non reported income)⟧

Note that the computer program rounds up the decimals when appropriate.
Moreover, if your reported amount is audited and it is lower than your income, your picture will be displayed on the screen of other participants in your group and on your own screen. Your picture is displayed during the current period and until the end of the current sequence. It is displayed until the end of the sequence, whether you will be audited or not in the following periods

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

Instructions for the Stigma treatment (translated from French) (*continued*)

Determination of your payoff in each period

Similarly, you can receive the picture of another group member who has been audited and who under-reported his income, except if you have been yourself audited and fined during the current period or during the previous periods of the same sequence. Indeed, at most a single picture is displayed on each participant's screen. This does not mean that only one participant has been audited and fined. But if you have been audited and fined, you are certain that your picture is displayed in the room until the end of the current sequence. If no picture is displayed on your screen, it is either because nobody has been audited, or because nobody has under-reported his income. If during one period or one sequence several group members have been audited and fined, the computer program assigns their pictures to other group members

At the end of each period, you are informed on the following elements:

– whether your report has been audited or not
– the total amount of your tax (including the fine if appropriate)
– your net payoff

You are not informed on the incomes, the reported amounts, and the payoffs of the other participants

Next, we ask you to express your sentiments regarding your audit during the current period. We first ask you to report the intensity of your sentiments when you have been informed on whether you were audited or not, by means of a scale graded from 1 (extremely weak sentiment) to 7 (extremely strong sentiment). Then, you will be requested to report the nature of these sentiments, by means of a scale graded from 1 (extremely negative sentiment) to 7 (extremely positive sentiment)

Your answers to these questions are not paid. They have no influence on the rest of the session; in particular, they influence neither the determination of your income in the next period, nor your audit probability. We thank you for however paying attention to these questions and to answer them sincerely

Number of periods in one sequence

At the end of each period, a new period can start automatically. You receive a new income at random and you make a new report. Each period is independent on the previous ones

The number of periods that compose one sequence varies across sequences and does not exceed 20. This number is determined in advance and does not depend on your decisions

What does change across sequences?

The same rules apply in the following sequences

The only difference is that at the beginning of any new sequence, the composition of your group of 8 members is randomly modified. During a new sequence, you interact with different participants. Some of them could belong to your group in the previous sequence and others did not

In addition, at the beginning of a new sequence, the pictures that were displayed until the end of the previous sequence are no longer displayed, except if these members are audited and they under-reported their income again

You are not informed on the total number of sequences in this part. This number does not depend on your decisions

To sum up:

– The part consists of several sequences and each sequence consists of several periods. During a sequence, you interact with the same seven participants
– In each period, you receive an income
– You choose the amount that you are willing to report
– If you are audited and you have under-reported your income, you must pay a tax on your actual income and a fine. In addition, your picture is disseminated in your group and on your screen during the current period and during all periods until the end of the current sequence
– You answer the questions regarding your sentiments
– You are informed on whether a new period or a new sequence starts

––––

We invite you to read these instructions again with attention and to answer the questionnaire that has been distributed to train yourself with the determination of payoffs. If you have questions regarding these instructions, please raise your hand. We will answer your questions in private

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

Part 2 (distributed after completion of Part 1)

You will be presented on your screen with several situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations

As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described by clicking a value from 1 (not likely) to 5 (very likely)

For example,

1. You wake up early one Saturday morning. It is cold and rainy outside.

(a) You would telephone a friend to catch up on news	1 Not likely	2	3	4 Very likely	5
(b) You would take the extra time to read the paper	1 Not likely	2	3	4 Very likely	5
(c) You would feel disappointed that it's raining	1 Not likely	2	3	4 Very likely	5
(d) You would wonder why you woke up so early	1 Not likely	2	3	4 Very likely	5

You will receive 2 Euros for answering these questions

Next, other questions will follow. Your answers are anonymous

End of the session

At the end of the session, we will randomly draw two periods in part 1 to determine your payoffs. Then, you will randomly draw the color that will determine your earnings for the preliminary part. You will next leave the room to get paid

References

Ahmed, E., & Braithwaite, V. (2004). When tax collectors become collectors for child support and student loans: Jeopardizing or protecting the revenue base? *Kyklos, 3*, 303–326.
Allingham, M., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics, 1*, 323–338.
Alm, J. (1991). A perspective on the experimental analysis of taxpayer reporting. *The Accounting Review, 66*(3), 577–593.
Alm, J., & McKee, M. (2004). Tax compliance as a coordination game. *Journal of Economic Behavior and Organization, 54*(3), 297–312.
Alm, J., McClelland, G. H., & Schulze, W. D. (1992). Why do people pay taxes? *Journal of Public Economics, 48*, 21–48.
Amodio, D. M., Devine, P. G., & Harmon-Jones, E. (2007). A dynamic model of guilt: Implications for motivation and self-regulation in the context of prejudice. *Psychological Science, 18*, 524–530.
Andreoni, J., Erard, B., & Feinstein, J. (1998). Tax compliance. *Journal of Economic Literature, 36*, 818–860.
Bayer, R. C., & Sutter, M. (2009). The excess burden of tax evasion – An experimental detection-concealment contest. *European Economic Review, 53*, 527–543.
Blumenthal, M., Christian, C., & Slemrod, J. (2001). Do normative appeals affect tax compliance? Evidence from a controlled experiment in Minnesota. *National Tax Journal, 54*(1), 125–138.
Bosco, L., & Mittone, L. (1997). Tax evasion and moral constraints: Some experimental evidence. *Kyklos, 50*, 297–324.
Becker, H. (1963). *Outsiders: Studies in the sociology of deviance*. New York: The Free Press.
Braithwaite, J. (1989). *Crime, shame and reintegration*. New York: Cambridge University Press.
Charness, G., & Gneezy, U. (2010). Portfolio choice and risk attitudes: An experiment. *Economic Inquiry, 48*(1), 133–146.
Coricelli, G., Joffily, M., Montmarquette, C., & Villeval, M. C. (2010). Cheating, emotions, and rationality: An experiment on tax evasion. *Journal of Experimental Economics, 13*, 226–247.
Cowell, F. (1990). *Cheating the government: The economics of evasion*. Cambridge, MA: MIT Press.
Cummings, R. G., Martinez-Vazquez, J., McKee, M., & Torgler, B. (2009). Tax morale affects tax compliance: Evidence from surveys and artefactual field experiments. *Journal of Economic Behavior and Organization, 70*(3), 447–457.
Elffers, H. (1991). *Income tax evasion: Theory and measurement*. Deventer: Kluwer Academic Publishers.
Fallan, L. (1999). Gender, exposure to tax knowledge, and attitude towards taxation: An experimental approach. *Journal of Business Ethics, 18*, 173–184.
Fortin, B., Lacroix, G., & Villeval, M. C. (2007). Tax evasion and social interactions. *Journal of Public Economics, 91*, 2089–2112.
Fessler, D. M. T., & Haley, K. J. (2003). The strategy of affect: Emotions in human cooperation. In P. Hammerstein (Ed.), *The genetic and cultural evolution of cooperation* (pp. 7–36). Cambridge, MA: MIT Press.
Gadd, D., & Jefferson, T. (2007). *Psychosocial criminology*. London: Sage.
Greiner, B. (2004). An Online Recruitment System for Economic Experiments. In K. Kremer, V. Macho (Eds.), *Forschung und wissenschaftliches Rechnen 2003. GWDG Bericht* 63, Göttingen: Ges. für Wiss. Datenverarbeitung. pp. 79–93.
Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852–870). Oxford: Oxford University Press.
de Hooge, I. E., Breugelmans, S. M., & Zeelenberg, M. (2008). Not so ugly after all: When shame acts as commitment device. *Journal of Personality and Social Psychology, 95*(4), 933–943.
de Hooge, I. E., Zeelenberg, M., & Breugelmans, S. M. (2007). Moral sentiments and cooperation: Differential effects of guilt and shame. *Cognition and Emotion, 21*(5), 1025–1042.
Izard, C. E. (1977). *Human emotions*. New York: Plenum Press.
Keltner, D., & Buswell, B. N. (1996). Evidence for the distinctness of embarrassment, shame and guilt: A study of recalled antecedents and facial expressions of emotion. *Cognition and Emotion, 10*, 155–171.
Kirchler, E. (2007). *The economic psychology of tax behaviour*. Cambridge: Cambridge University Press.
Lefebvre, M., Pestieau, P., Riedl, A., Villeval, M.C. (2011). *Tax Evasion, Welfare Fraud, and "The Broken Windows" Effect: An Experiment in Belgium*, France and the Netherlands. IZA Discussion Paper 5609, Bonn.
Lemert, E. M. (2002). Primary and secondary deviance. In H. N. Pontell (Ed.), *Social deviance: Readings in theory and research*. Upper Saddle River: Pearson, Prentice Hall.
Lewis, M. (1971). *Shame and guilt in neurosis*. New York: International Universities Press.
Lewis, M. (1992). *Shame. The exposed self*. New York: Free Press.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002

Lowenstein, G. F., Hsee, C. K., Weber, E. U., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*, 267–286.
Maciejovsky, B., Schwarzenberger, H., & Kirchler, E. (2011). Rationality vs. emotions: The case of tax ethics and compliance. *Journal of Business Ethics, 109*, 339–350.
Murphy, K. (2008). Enforcing tax compliance: To punish or to persuade? *Economic Analysis and Policy, 38*, 113–135.
Murphy, K., & Harris, N. (2007). Shaming, shame and recidivism. A test of reintegrative shaming theory in the white-collar crime context. *British Journal of Criminology, 47*, 900–917.
Myles, G. D., & Naylor, R. A. (1996). A model of tax evasion with group conformity and social customs. *European Journal of Political Economy, 12*(1), 49–66.
Pommerehne, W. W., Hart, A., & Frey, B. S. (1994). Tax morale, tax evasion and he choice of policy instruments in different political systems. *Public Finance, 49*, 52–69.
Roseman, I. J., Wiest, C., & Swartz, T. S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology, 67*, 206–221.
Sabini, J., & Silver, M. (1997). In defense of shame: Shame in the context of guilt and embarrassment. *Journal for the Theory of Social Behaviour, 27*, 1–15.
Schwartz, R., & Orleans, S. (1967). On legal sanctions. *University of Chicago Law Review, 34*, 282–300.
Slemrod, J. (1998). On voluntary compliance, voluntary taxes, and social capital. *National Tax Journal, LI*, 485–492.
Slemrod, J. (2007). Cheating ourselves: The economics of tax evasion. *Journal of Economic Perspectives, 21*(1), 25–48.
Spicer, M. W., & Becker, L. A. (1980). Fiscal inequity and tax evasion: An experimental approach. *National Tax Journal, 33*, 171–175.
Tangney, J. P. (1991). Moral affect: The good, the bad, and the ugly. *Journal of Personality and Social Psychology, 61*, 598–607.
Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. New York: The Guilford Press.
Tangney, J. P., Dearing, R. L., Wagner, P. E., & Gramzow, R. (2000). *The test of self-conscious affect-3 (TOSCA-3)*. Fairfax, VA: George Mason University.
Tangney, J. P., Miller, R. S., Flicker, L., & Barlow, D. H. (1996). Are shame, guilt and embarrassment distinct emotions? *Journal of Personality and Social Psychology, 70*, 1256–1269.
Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology, 26*(4), 247–261.
Tomkins, S. (1962). *Affect/imagery/consciousness* (Vol. 1). New York: Springer.
Tomkins, S. (1963). *Affect/imagery/consciousness* (Vol. 2). New York: Springer.
Torgler, B. (2002). Speaking to theorists and searching for facts: Tax morale and tax compliance in experiments. *Journal of Economic Surveys, 16*(5), 657–683.
Yitzhaki, S. (1974). A note on income tax evasion: A theoretical analysis. *Journal of Public Economics, 3*(2), 201–202.
Zeelenberg, M. (2007). Emotional consequences of alternatives to reality: Feeling is for doing. *Behavioral and Brain Sciences, 30*(4), 469–470.
Zeelenberg, M., Nelissen, R. M. A., Breugelmans, S. M., & Pieters, R. (2008). On emotion specificity in decision making: Why feeling is for doing. *Judgment and Decision Making, 3*(1), 18–27.
Zeiliger, R. (2000). *A presentation of Regate, Internet based software for experimental economics*. http://www.gate.cnrs.fr/~zeiliger/regate/RegateIntro.ppt, GATE. Lyon: GATE.

Please cite this article in press as: Coricelli, G., et al. Tax evasion and emotions: An empirical test of re-integrative shaming theory. *Journal of Economic Psychology* (2013), http://dx.doi.org/10.1016/j.joep.2012.12.002