

## **The person behind the “broken window”**

The influence of the environment and personality on undesired behavior

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**Abstract:**

The Broken Windows Theory predicts that when disorder is present in a surrounding, people will behave in an antisocial way. How exactly a disorderly environment affect a person and which mechanisms could make the person behave in an anti-social way? Approaches regarding that topic are mostly dealt in context of the Broken Windows Theory. Popularity of this approach ranks behind its controversy. Goal of the present study was to assess the influence of the environment and camera surveillance on human behavior, moderated by a personality trait. In a 2 x 2 factorial design in which participants were confronted with a tidy and untidy setup of a room they got the opportunity to cheat for money and leave mess behind. The influence of environmental factors was stronger in people who feel their lives are being controlled by external factors, meaning they have an external locus of control. Moreover we found no damping effect on cheating of camera surveillance in our experiment nor did it raise the self-awareness of the participants. Results suggest that there has to be an extra „push“ to act antisocial in a disorderly environment, with witch has to be dealt in further research.

## Introduction

*“Rubbish strewn and highly disordered  
streets bait spirits of mischief  
like a light in the night attracts midges.”*

The author

This, maybe by most people doubtfully considered equitation, illustrates the “*Broken Windows theory*” (BWT) developed by Wilson and Kelling in the early years of 1980 in New York City. This theory is based on the assumption that a comparatively harmless phenomenon, like littering the streets, spraying graffiti or seeing abandoned cars, can lead to much worse signs of disorder like a total state of neglect with high rates of violent and property crime (Wilson & Kelling, 1982). Environmental factors which could signal the beginning state of neglect of a street or a neighborhood are for example discarded cigarette butts on the street, full bags of domestic refuse on the pavements, graffiti on the walls of the houses or dismantled fences which are not repaired. The BWT suggests that an untended environment could stimulate undesired and anti-social behavior in that area, and controlling disorder could reduce minor offences and could eventually decrease serious crimes as well.

The present research aims at dealing with the problem of the BWT from another perspective. We try to explore in which way environmental factors influence the intrapersonal psychological processes which could then lead to the occurrence of criminal behavior. Of course, criminal behavior can be summarized in a wide range of terms, but for this research we will focus on minor types of undesired behavior. In the remainder of this introduction we will further elaborate on the BWT leading to concrete hypotheses based on latest research, trying to solve the puzzle of the processes behind it.

### *Broken Windows Theory Revised*

Much research has been done on the theory that a disorderly environment could elicit sorts of criminal behavior. Possibly the most famous example for this has been shown by Philip Zimbardo, professor of psychology at Stanford University.

He parked a car, without license plates in the front and rear, with its hood up on a street in the Bronx, New York, and a comparable automobile on a street in Palo Alto, California. The former city was

known as a run-down town with huge problems of unemployment and littering; the latter were private possessions are cared for. The car in the Bronx was looted by people within the first ten minutes after parking it. Within the next twenty-four hours, nearly everything that could make a good deal on the street-market has been removed. Then random destruction of the vehicle began. The car in Palo Alto wasn't touched by anyone the first twenty-four hours and no signs of vandalism could be seen. But after the car parked in Palo Alto was damaged by the experimental supervisor, it was also looted (Zimbardo, 1969).

In general it can be said that neighborhood safety depends more or less on the decision of how people deal with their direct surrounding with reference to the abuse of environmental factors like littering the streets. The logic in this famous example by Philip Zimbardo, showing the dramatical effects of the BWT, can be simplified in the following way: signs of neighborhood decay lead inhabitants to withdraw from public space of the neighborhood and thereby reduce the efficacy of informal social control, leaving the gap open for more criminal behaviors (Wilson & Kelling, 1982).

But the model of the BWT by Wilson and Kelling does not go without being criticized. Taken together, the evidence from New York City and from research on five different cities provides no direct support for a simple causal disorder-crime relationship as hypothesized by Wilson and Kelling (Harcourt & Ludwig, 2006). In all cities crime rates decreased significantly over a period of six to seven years, allegedly because of the local authorities dealing much more intensively with minor crimes in a so called "zero tolerance" policing strategy. However the crime rates could also have been decreased due to local economic and demographic factors. The main explanations concern economic growth with jobs for millions of young people, and general changes in the drug market, because of changing from crack to other kinds of drugs (Bowling, 1999).

### *The role of social control*

Informal social control can be influenced by the use of Close Circuit Camera Television (CCTV). This is nowadays a common used tool for social control. It is the number one used tools by the government to increase social control in cities, parking lots or busy places like shopping malls. In the United Kingdom, more than four million cameras have been set up for surveillance purposes (The

Associated Press, 2007). Poyner (1992) showed that when cameras were installed at the University of Surrey in different car parks all over the campus, car crime and especially theft from vehicles declined significantly.

#### *Alternative Explanations of the broken windows model*

As we have seen, the old model of the BWT has some inconsistency. An alternative explanation for the social control mechanism might be if an environment is disorderly it may give the impression that disorder is tolerated and order cannot be enforced, so it seems that people can break the law without a punishment. So it signals a social norm, meaning that disorder is normal and accepted in that kind of environment. This term is named “social proof” by Robert Cialdini (1990). It is most influential under situations when people are uncertain and the situation is ambiguous. Then people are more influenced to observe the behavior of others, to accept that behavior as correct and behave in the same manner. Cialdini and Kallgren found in one of their studies that this process is buffered when people are made aware of their own norms and rules, for example by watching themselves on a monitor (Cialdini, Kallgren & Reno 1991). So it could be possible that a disorderly environment signals a social norm.

One experiment done by Kees Keizer describes the Cialdini effect relating to social proof. A comparison was made whereby an orderly condition without graffiti on the walls was contrasted to a disorderly condition where graffiti was sprayed on the walls of a small alley. The litter found in the first condition after a period of time was significantly lower than in the second condition. To present how a disorderly environment could lead to more severe criminal behavior, a similar study was conducted in which people had the opportunity to steal money visible from an envelope hanging halfway outside a mailbox, again taking place in a orderly or disorderly surrounding. Like in the first experiment, significantly more envelopes were stolen in the disorderly condition (Keizer & Lindberg, 2008). So the first part of our revised model social proof takes the place of social control regarding the old model. Our first research hypothesis can be named that people in a broken windows environment will show more signs of undesired behavior compared to people who are in an orderly or non-broken windows environment.

We also have to take the effect of cameras into account, because the process of social proof can also be influenced by cameras. As we have seen, the effect of cameras on social control was quite mixed, while some show a positive and others a negative effect (cf. Grandmaison & Tremblay, 1997).

Research by Govern with reference to the use of cameras show that participants who are able to watch themselves in mirrors or are being observed by cameras would reach a higher state of self-awareness (Govern, 2001). With reference to that it is important for us to shift the view to a study done by Kallgren, Reno & Cialdini (2000), because it could be possible that the norm-focusing effect they found in their studies was induced by higher states of self-awareness. In our new model self-awareness could focus the personal norms of people and influence the mechanism of social proof. Therefore we state as a second hypothesis that the presence of a camera will inhibit the adverse effect of a messy environment on criminal behavior, because a camera will elicit a higher state of self-awareness in subjects present in that environment.

In our study it is quite important to take the personality of a possible offender into account. The BWT will work for everybody inside such an environment. But some people are more sensitive for the signals from their environment than others. In 1966 James Rotter introduced the term "Locus of Control". It refers to the extent to which individuals believe that they can control events that affect them (Rotter, 1966). Individuals scoring high on internal locus of control believe that they can control events from their own actions. Those scoring high on the external domain of locus of control believe that other people, fate, or luck are responsible for events. As a third hypothesis the influence of environmental factors will thus be stronger in people who feel their lives are being controlled by external factors.

## **Methods**

### *Participants*

A total of 76 students participated in the experiment. These participants vary in age from 18 to 35 years old, with an average of 20,7 years ( $SD = 1,9$ ). The current sample consists of 26 men and 50 women. As reward for their participation they received either one course credit, which they needed to successfully finish their study, or five euro cash for participating. Beside that they could earn money depending on their results on the tasks during the experiment. The design was a 2 (room: orderly vs.

disorderly) \* 2 (camera: present vs. not present) factorial design. Participants were randomly assigned to experimental conditions.

### *Instruments*

Prior to participating in the experiment, all participants filled in a personality questionnaire that contained the Internal-External Locus of Control Scale (Rotter, 1966). After the experiment the participants filled the 'Situational Self-Awareness Scale' (SSAS) by Govern (2001) and a short version of the State Ego Depletion Scale (Ciarocco, in progress) to measure depletion. The time between the questionnaire and the experiment was longer than two weeks to ensure that the participants could not connect the personality tests with the main experiment to manipulate outcomes.

*Locus of Control:* This questionnaire consisted of the Internal-External Locus of Control Scale (Rotter, 1966). The participants were presented with 2 statements at a time and had to choose which one they mostly agree on. For example they had either to agree on "Children get into trouble because their parents punish them too much" or "The trouble with most children nowadays is that their parents are too easy with them". In a sum they had to check on 23 questions containing each two statements. Correlation coefficient  $\alpha$  measured here is 0.78 which makes it reliable to be used as an instrument.

*Situational Self Awareness Scale (SSAS):* The 'Situational Self-Awareness Scale' (SSAS) by Govern (2001) was used to measure self-awareness. It consists of a private, public and surrounding self-awareness scale with different items. The SSAS consist of 9 items, and is measured on a 7-point likert scale ranging from 1 (I totally disagree) to 7 (I totally agree). Reliability was good for each of the single scales ( $\alpha_{\text{Situational Self Awareness Private}} = 0.64$ ,  $\alpha_{\text{Situational Self Awareness Public}} = 0.56$ ,  $\alpha_{\text{Situational Self Awareness Surrounding}} = 0.87$ ); as well as for the total scale (Cronbach's  $\alpha = 0.81$ ).

*State Ego Depletion Scale:* We made use of a short version of the State Ego Depletion Scale (Ciarocco, in progress) to measure depletion. In a study by Mead (2009), an effect was found of self-control on dishonest behavior of people. To rule that possibility out and so to be safe from alternative explanations, we make use of that questionnaire. The original questionnaire is 25 items long, but in our case we shortened it because it only works as a detector for an alternative explanation. Items like

“Right now, I feel motivated” or “I feel mentally exhausted” were filled in by the participants. The depletion questionnaire consists of 6 items, measured on a 7-point scale ranging from 1 (I totally disagree) to 7 (I totally agree). Reliability of the scale was good at Cronbach’s alpha =0.76.

### *Procedure*

The main experiment took place in one of two rooms; a clean, neat room, and a disorderly room (see figure 3). For our disorder condition, we used older furnishing with scratches and damaged parts. To further reinforce the disorder condition, we made the common room generally untidy by spreading newspapers, magazines and used cups around the room. We also left a desiccated plant in the room, and placed litter and dust on floor near the rubbish bin. We also filled the rubbish bin  $\frac{3}{4}$  up with old plastic cups and common rubbish. The neat room was filled with modern furnishing and it was cleaned every day during the whole experimental phase. Also the dustbin was emptied every day to give the room a proper look. We also suspend a poster, with the size of 120 cm \* 80 cm, on the left wall of the room, to punctuate on the difference of the rooms and also for a better sentiment (See figure 1 & 2).

In case there was a camera present in the room, it was explicitly pointed out to the participant. The camera was located next to the participant at their left hand side, at eye level. They were told the purpose of the camera was to make contact with the experimenter in case they needed to (i.e. when they would run into a problem), and they were instructed to wave to the camera to notify the experimenter when they completed their task. When there was no camera present, the participants were told that they could knock on the door of the adjacent room in case they needed contact (for example when running into a problem) and also when they completed their tasks.

The participants were asked to complete two tasks with which they could earn money. The first task the participants were subjected to was a task on a computer where they have to find two numbers that add up to ten in a matrix of 12 numbers, closely related to the task used by Mead (2009). In our experiment the participants had to do the task on a personal computer instead of filling in sheets of papers. They could earn 20 cents per correct solution. All puzzles were presented one at a time, with a short break of 60 seconds every five puzzles so that the participant could acquire the surroundings and



eat or drink. The participants were given 10 minutes to solve as many puzzles as they could, but a crash was enforced at 9 minutes and 30 seconds.



Figure 1: Poster Order Condition



Figure 2: Poster Disorder Condition

The participants were told beforehand that the computer wouldn't save anything in case of a crash and that they alone were responsible to remember their score in that case. The crash was preprogrammed by the experimenter and broke the program down after 9 minutes and 30 seconds of working with it.

The second task was presented in the same room at the same table. Participants were introduced to plastic cards with anagrams on the front of the card and the correct solution of the anagrams on the back of the card. There was no possibility to detect the correct solution without turning the card. In total they had to look at 21 anagrams of which only 15 were solvable (cf. Eisenberger, Heerdt, Hamdi, Zimet & Bruckmeir, 1987). Participants had to solve 16 puzzles or more to get a 50 percent bonus on the money they had won in the puzzle task. Six cards of anagrams contained words which make no sense and of which was ruled out by a pretest that they were known to the participants. Words are presented for German participants in their native language and for Dutch participants in Dutch language. The participants then had 30 seconds to look at the anagram on the front of a card and score for themselves if they got the solution right or wrong after turning the card when 30 seconds were over. At the end of the task they had the possibility to sum up their correct anagrams and tell their results to the experimenter. Participants received the following introduction read aloud.

**Table 1.** *The introduction of the anagram task read out aloud*

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*I'm going to have you look at the scrambled letters of a number of words. These words are printed on the cards in front of you. Your task is to unscramble the letters in order to figure out each word. All*

the words are existing words that make sense. After 30 seconds you will hear a “beep” and then you have to turn the cards. On the backside of each card, the solution is printed where you can verify your answer. When you figured out the word, write a plus sign in the cell on the answer sheet in front of you, indicating that you knew the right solution. If you can't figure out the word on a card, write down a minus sign. Please turn the cards in this manner because they're ordered [demonstration]. Work on only one card at a time and do not turn back to previous cards. There are a total of 21 words. When you got 16 or more anagrams correct at the end of task, you will receive an extra bonus of 50 percent top up of what you already earned in the first task. While students vary in their ability, most are able to get 16 words or more correct. After the 21st word, you can wave to the camera / come to my room [depending on condition]. Are there any questions? Ready, begin.

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The participants got the opportunity to cheat on the results on both tasks, which could be checked after the experiment ended. All participants were offered something to eat and drink during the experiment. The food and beverages were contained in a disposable wrapper or cup. At the end of the experiment was checked whether the trash has been thrown in the garbage bin or left behind.

**Table 2.** *The 21 Words: Nonsense words are marked bold and red.*

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**German**

1. ECKIG
2. PREIS
3. **PANZE**
4. EBENE
5. JAGEN
6. SOCKE
7. EICHE
8. **ICHEN**
9. LINKS
10. TABAK
11. **MAISZ**
12. STARK
13. BACKE
14. JACHT
15. **ZACHE**
16. DABEI

**Dutch**

1. TAFEL
2. GROEN
3. **AGGER**
4. LEPEL
5. PAARD
6. JUIST
7. BRUID
8. **LANCT**
9. NOOIT
10. STIPT
11. **SKALK**
12. Vlieg
13. DUIT
14. WAARD
15. **FIUND**
16. GEVEL

17. AFFEN  
 18. PLAGÉ  
 19. **PARZE**  
 20. **GACKS**  
 21. ZECKE

17. LINKS  
 18. PUPIL  
 19. **SWERO**  
 20. **HIRUT**  
 21. GARDE

### *Manipulation Check*

To verify that the manipulation of the rooms produced the desired effect of creating an orderly or a disorderly situation, a manipulation-check measure was used which the participants had to fill in afterwards in another room near the location to promote that the subjects rehearse everything out of their own memory. We used a self-invented disorder scale whereby asking the participants to indicate the extent to which they thought the room was untidy, old furnished, cheerful, neglected, well-lighted, warm, little, cold, sociable, clean and tidy. The disorder questionnaire consists of 11 items, of which 5 items have been used to calculate the final score. These items are measured on a 5-point scale ranging from “completely not” to “completely”. Correlation coefficient  $\alpha$  measured here is 0.68.

To ensure that foreign students understood all questions, the experimenter was in reach for the participants. Beside the manipulation for the messy environment we included one question about if the presence of the camera was recognized by the participants.

## **Results**

The data of the 76 participants was analyzed with the latest version of SPSS 18. All the data was checked twice by different researchers to preempt mistakes during data collection phase.

The two main dependent variables of this experiment are ‘trash left behind’ and ‘did lie/did not lie’. ‘Trash left behind’ is measured in 3 categories, in which 0 = everything thrown away, 1 = some thrown away, some left behind, and 2 = everything left behind. The scores 0 and 2 are the most common.

Some participants did not eat or drink during the experiment; those have been coded as missing at random values. Lying has been measured as a dichotomous variable, because the decision to lie is more important in our case than the quantity of lying. 23 of the 76 participants have lied during the experiment. Four subjects lied only on the *puzzle-task*, 15 subjects lied only on the *anagram-task*, and

four lied on *both*. Of those who lied on the first task, six people added one to their score, two added two matrices, and one person even added four to his score. Of those who lied on the anagrams 16 people say to have solved 16 anagrams, two say to have solved 17, and one reports 18 solved anagrams.

*Manipulation*

Before testing our hypotheses, we checked whether our manipulations were successful. The check for the success of our manipulation of the rooms, we use a “One-Way Analysis of Variance” (ANOVA) with the scale for the disorder check as our dependent variable (see table 4). As predicted, subjects in the disorder condition perceived the room as more messy than people in the order condition ( $F(1,76) = 69.090, p < .001$ ). See also table 3 for the means of the two conditions in this experiment.

**Table 3.** Means and standard deviations of perceived disorder by condition

	Order Condition	Disorder Condition	Total
<i>N</i>	37	39	76
<i>M</i>	1,8324	3,2179	2,5434
<i>SD</i>	,49780	,89026	1,00324

**Table 4.** Results of the One-Way Analysis of Variance with the outcome of the “Disorder Check” as dependent variable, and the two different rooms as factors

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>
<i>Between Groups</i>	36,448	1	36,448	69,090
<i>Within Groups</i>	39,039	74	,528	
<i>Total</i>	75,487	75		

\*\*\*=  $p < .001$

Furthermore the participants of our study recognized that there was a camera installed in the room. To verify the manipulation check of the camera, we used the question “There was a camera in the room?”. Participants had the choice of answering “yes” or “no”, depending on which condition they were in. Our statistical results prove that subjects recognized the camera and that the manipulation was successful ( $\chi^2(1, N = 76) = 30.96, p < .001$ ).

### *Disorder and Camera Effect*

Subject left significantly littered more in the disorder condition than subjects who underwent the experiment in the order condition ( $\chi^2 (1, N = 69) = 5.368, p = .021$ ). We could not find any statistical significant effect for the presence of a camera; the presence of the camera didn't stop the participants to lie ( $F (1, 69) = 0.42, p > .05$ ). Moreover they didn't litter less when a camera was in place ( $F (1, 69) = 0.74, p > .05$ ). Additionally we could not find any effect of the camera on self-awareness measured with the scales developed by Govern, but we could find a significant effect of the presence of a camera on Social Control: ( $F (1, 76) = 4.16, p < .05$ ). The mean scores of having the feeling to be watched differed significantly when comparing the mean scores;  $M_{with\ camera} = 4.08, M_{without\ camera} = 3.43$ .

### *Interaction Personality and Disorder*

To check whether there is an interaction effect of personality and disorder on lying and leaving litter behind we used the *logistical regression method* developed by Cooper, Grey & Dabney (1992). Order has been transformed to +.5 and disorder has been transformed to -.5. The order condition works in our case as indicator group. We centered all the data of the subject's personality questionnaires to avoid inter-correlation between the continuous variable and the interaction term. There is a significant interaction effect of the condition and internal/external locus of control on lying ( $\beta (.384) = 0.01, p < .05$ ). Groups with internal and external Locus of Control, where we matched lying/no lying in disorder and order condition, show that individuals who believe that they cannot control events that affect them, thus having an external locus of control, are more prone to cheat in an environment which is messy in relationship with the order condition  $\chi^2 (1, N = 38) = 6.22, p = .015$ . No effect could be found for people who score Low on locus of Control, thus having an internal locus of control. The goodness-of-fit test (.884) describes that our model fits quite good into our set of observations.

**Table 6.1** Results of the logistical regression method used for the centered data of the Rotter IE Scale

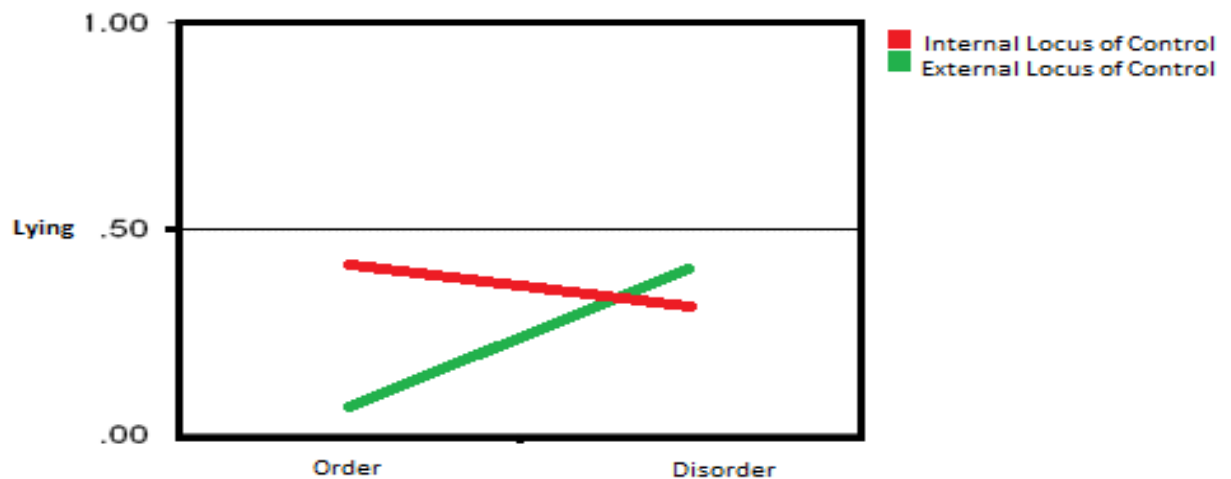
Predictor	S.E.		W	<i>d</i>	<i>p</i>	<i>e</i> (B)
	$\beta$	$\beta$	$\chi^2$	<i>df</i>		
Constant	-1.01	.30	12	1	.001	.36
Order/disorder	.731	.59	1.5	1	.217	2.1
Locus of Control	-.106	.08	1.9	1	.166	.90
Order/disorder * Locus of Control	.384	.15	6.3	1	.012	1.5
Constant	-1.01	.30	12	1	.001	.36

**Table 6.2** Results of the logistical regression method used for the centered data of the Rotter IE Scale

Test	$\chi^2$	<i>df</i>	<i>p</i>
Omnibus test of model coefficients	8.6	3	.035
Hosmer & Lemeshow goodness-of-fit test	3.0	7	.884

Model summary: -2 Log likelihood = 86.186, Cox & Snell  $R^2 = .107$ , Nagelkerke  $R^2 = .15$

Figure 3 shows the interaction effect of Locus of Control and Disorder on lying. People having an external locus of control are more prone to cheat in an environment which is messy in relationship with the order condition.



### *Alternative Explanations*

As stated earlier, we made use of a depletion scale to rule out that people are lying because of being depleted. Our statistical test could not find any significant results for any unwanted side effects of depletion during our research ( $F(1,76) = .105, p = .75$  n.s.).

## **Discussion**

Goal of the present study was to assess the influence of the environment and camera surveillance on human behavior, moderated by a personality trait. Our results confirm that participants in a disorderly environment will litter more, even when there is a camera in place. So we have successfully proved in a laboratory environment that untidy surroundings will make people even litter more. Surprisingly we found a direct effect of disorder on littering even more. In our research there was no direct effect of a disorderly room on lying. However, we did find an interaction effect of Locus of control via a disorderly environment on the decision to show a more harsh form of rule breaking behavior, namely lying, as predicted in our hypotheses. People who have an external locus of control believe that external forces, like luck, determine their outcomes. So definitely externals believe that the environment has a large impact on the choices someone makes. Participants with external locus of control are lying more often in the disorderly environment and so it is a moderator for lying, but not for littering. Since there is a direct result of disorder on littering, but for lying this effect is moderated by an external LOC, might people need an extra 'push' to show behavior that is worse than observed in the environment?

In our study we could not find any alternative explanations having an effect, like depletion which does not play a role in our study. The results of our study support the use of laboratory experiments in finding out the different factors underlying the broken windows construct. This study gives us a first insight of how the puzzle of BWT in the near future could be solved.

### *The use of Close Circuit Television*

Even the use of cameras is highly questionable with reference to social control. Some studies report an uncertain or no apparent effect of cameras on crime (Welsh & Ferrington, 2002). In his paper he

described the study done by Grandmaison & Tremblay (1997) were 13 stations were equipped in an experimental group with approximately ten cameras per station over the time of 18 months in the early 1990s. 52 other stations served as a control group in that experiment. In both groups the crime rate declined by around 20 percent, which clearly shows that there had to be another explanation beside the cameras.

We found no significant effect of the camera surveillance during the whole experiment and so could not show that the presence of a camera will reduce undesired behavior in a disorderly environment via inducing higher Self-Awareness in participants. The presence of a camera does not reduce undesired behavior in a disorderly environment and does not promote to higher self-awareness in participants.

The presence of a camera does not reduce undesired behavior in a disorderly environment, neither does it promote higher self-awareness in participants. As mentioned earlier, some studies did find an effect of the presence of cameras on crime rates, where other studies found no effects of cameras (Poyner 1992, Welsh & Ferrington 2002, Grandmaison & Tremblay 1997). We did not find an effect of the presence of a camera. In our second hypothesis we stated that the presence of a camera will inhibit the adverse effect of a messy environment on criminal behavior, because a camera will elicit a higher state of self-awareness in subjects present in that environment.

In our case, the camera stood at the left hand side of the participants and thus not in direct view. We chose this setup because participants couldn't know if we could see the results of the matrices or not, so the decision to cheat or not cheat was not affected by the experimental setup. Just recording the face of the participant would eliminate the effect that people have the chance of getting caught while cheating, which is an important effect of camera surveillance. Even more with that kind of setup we tried to imitate the usual setup of CCTV, meaning that there is no obvious presence of a camera. The potential offender cannot be sure if the action is caught on tape or not, like in realistic use of CCTV. Big towns spend more and more money on developing and installing new camera surveillance in their inner cities to prevent crime and disorder. People are confronted with them nearly every day in supermarkets, train stations or shopping malls. Maybe a possible reason for getting no effect is that the people aren't aware of cameras any more.



*Suggestions for further research*

Authors claim that public self-awareness can be induced in the laboratory by exposing participants to mirrors (Webb, Marsh, Schneiderman, & Davis, 1989). It could be possible that an interplay of cameras and mirrors strengthen the chance to induce self-awareness in participants.

Studies show that a high state of self-awareness sensitizes the individual to the implications of behavior for their own evaluation (Vallacher, 1979). The principle of social proof, namely that people validate the correctness of their actions by comparing to signals from their direct surrounding (Cialdini, Wosinska, Barrett, Butner & Gornik-Durose, 1999), could be affected by morality and thereby produce the broken window related behavior. Because social proof is an unconscious process, self-awareness makes people focus more on themselves. The more people focus on their personal norms, the less they comply to behavior in their surroundings (Kallgren et al., 1991). Higher states of self-awareness is likely related to a stronger focus on the personal norms of an individual (e.g., Carver & Scheier, 1978; Duval & Wicklund, 1972). It is possible that high states of induced self-awareness lead people with a low morality to behave in an undesired way, whereby people with a high score on morality behave in a good way. So it remains for research to identify empirically if there could be a possible interaction of self-awareness and morality.

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## Appendix



Figure 4: Room disorder condition



Figure 5: Room order condition