THE MURAL AS GRAFFITI DETERRENCE

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ABSTRACT: This study investigated whether the use of a colorful mural as a passive thematic prompt could significantly reduce new graffiti attacks in an area prone to graffiti. A control design with a preceding baseline tested this hypothesis. It was predicted that the mural would reduce the proportional amount of new graffiti that appeared on the mural area compared with a blank area. A colorful mural was painted on the section of a wall that had attracted the most graffiti during baseline. Data consisting of numbers of instances of new graffiti were recorded by two observers. Eight new graffiti attacks were recorded on the newly cleaned area with the mural after 20
weeks (vs. 14 attacks in the fortnight of baseline). The main control section of wall was subject to significantly higher levels of graffiti during intervention than the mural section.

**Keywords:** graffiti; mural; tagging; vandalism; graffiti deterrence

**Graffiti means** any

unauthorized inscription, word, figure, painting or other defacement that is written, marked, scratched, sprayed, drawn, affixed, painted or engraved on any surface of public or private property by any graffiti implement to the extent that it was not authorized in advance by the owner or occupant of the property. (Willet, 1996, Part III Definitions, para. 2)

Graffiti has been around since the earliest civilizations, from Roman soldiers’ names on the Egyptian pyramids to inscriptions on Mayan buildings. Some graffiti has historical significance, such as that of the Berlin Wall, which has been described by artists such as Keith Haring and Thierry Noir as “the world’s largest canvas” and nowadays attracts tourists to preserved areas such as the Potsdamer Platz and the East Side Gallery (as cited in Burkhardt, 2001). Most graffiti, however, is considered vandalism or social crime (Cohen, 1973) rather than artistic expression, although in many cases, artistic skill is undoubtedly involved in aerosol art, stylized pictorial images, and tags.

The present study looks at prevention of inner-city graffiti in a New Zealand city of approximately 120,000 people. This type of graffiti takes three general forms. First, graffiti is the language of city youth, which is largely concerned with names and identity. The second category of inner-city graffiti is gang graffiti, which is territorial and often threatening in nature. The third category consists of occasionally authorized graffiti by artists whose colorful mural-like artworks adorn buildings, subways, bridges, and trucks (Anderson & Verplanck, 1983). Inner-city graffiti grew out of the black neighborhood culture of New York City in the early and mid-1970s as part of a homegrown alternative youth culture that included new forms of music (rap, sampling, scratching) and dancing. “Tagging” and “piecing” by graffiti writ-
ers today has spread into large and small cities across the world (Ferrell, 1995). Tagging consists of the writing of nicknames on walls (Ferrell, 1995), whereas piecing, according to Callinan (2002), is the creation of larger, more complex artworks that generally include the writer’s tag and can include a number of “pieces” done by cooperating groups of artists.

Sommer (1974) posited that graffiti allows people to call a place their own and humanizes otherwise sterile areas. Lomas’s (1973) research could be interpreted as supporting this idea, finding that writing occurs on walls wherever the writer is assured of an audience, with the graffiti often taking the form of a series of communications. Newman (1972) suggested that offense rates are higher in areas that do not appear to belong to anyone and which are not under constant surveillance.

Ferrell’s (1995) study of contemporary graffiti in the United States found that graffiti occurs in urban environments where atmospheres of segregation and control of social space exist. He speculated that writers seek to disrupt the order of authority and to reclaim the public space from which they feel excluded. Graffiti is employed as a means of resisting legal, political, and religious authority. Ferrell found that writers in the United States preferred to “hit” on city structures, such as bridges, rather than on some other person’s property. They don’t “bomb” individual cars or houses but only large businesses, public buildings, and other urban symbols of the system from which they feel excluded. “They have the boringest crap around so why not beautify it?” (Ferrell, 1995, p. 82). Indeed, this has also been found to be the case in New South Wales (NSW), Australia. Callinan (2002) states that in 1999, 40.4% of graffiti works targeted education buildings, 15.6% were found on private properties, and public transportation (e.g., trains, ferries) and transportation buildings attracted 14.8% of the total number of works.

Cohen (1973) notes that society appears ambiguous in its attitude toward vandalistic acts such as graffiti writing, and often it is regarded with tolerance and amusement, despite the fact it is legally prohibited. Although graffiti writing is a relatively minor act of vandalism, it does contribute to an atmosphere of neglect, which often acts as a releaser stimulus for more costly acts of vandalism (Wallace & Whitehead, 1989). Also, the social costs of defaced environments can include a subsequent fear of crime and vandalism, which devalues community life (Alvi, Schwartz, DeKeese, & Maume, 2001; Garland, 1998; Goldstein, 1996). Ross and Jang’s (2000) telephone survey of 2,482 Illinois residents, carried out in 1995, supported this view. They found that respondents living in areas with high levels of visible social disorder, such as vandalism, graffiti, and rundown buildings, rated higher on questions dealing with their levels of fear and mistrust than did residents who lived in areas where fewer of these markers of a lack of social control existed.
Eck and Martinelli (1998) surveyed 54 state highway agency maintenance units in the United States and found that almost 30% of the respondents indicated that graffiti was prevalent at schools and at retail and commercial areas. Their survey results revealed that 50% of metropolitan areas were affected. Eighty-two percent of the states reported that graffiti was a recurring problem. The Los Angeles Rapid Transit District alone spends $13 million a year on cleanup (Ferrell, 1995). Agencies were asked to estimate how much money was spent annually on graffiti prevention programs. The minimum reported amount was about $5,000, and the maximum amount was $7 million. Although actual data on the costs of dealing with graffiti are extremely limited, Eck and Martinelli estimated that removing graffiti appears to cost between $1,000 and $2,000 per incident. The costs to city councils and property owners because of graffiti can be extensive in terms of removal and maintenance.

Wallace and Whitehead’s (1989) study of the incidence of graffiti in England revealed that 5% to 10% of a local authority’s maintenance budget is spent on damage repair, which includes graffiti removal. Graffiti removal in Auckland, New Zealand, is estimated to cost $2 million a year (“Auckland Authorities Spend,” 1997). In NSW, Australia, it has been estimated that $3 million is spent each year on graffiti removal and repairing of vandalism to rail transportation alone (Callinan, 2002). Callinan (2002) also identifies some of the indirect costs associated with graffiti. These include factors such as higher insurance rates, increased government taxes to fund graffiti removal, lower property values, a decrease in customers’ use of businesses because of a perceived threat to their personal safety, and the costs associated with developing and implementing graffiti prevention methods.

Marking agents most commonly used for graffiti are spray paints, felt tips, markers, and ballpoint pens (Wallace & Whitehead, 1989). Eck and Martinelli’s (1998) U.S. transit authority survey found that aerosol paints dominate as graffiti agents. Graffiti removal techniques vary. The most common policy among U.S. state transit authorities is to remove graffiti as part of routine maintenance operations. Graffiti is removed by waterblasting, sandblasting, or painting over, the latter being the most effective and widely used technique. Eck and Martinelli found that although some state agencies have success in removing graffiti soon after it appears, there is a feeling of despondency as new graffiti soon follows. Removal methods become costly if they have to be repeated on numerous occasions to remove recurring graffiti. Wallace and Whitehead (1989) found that “if new graffiti is not removed quickly more graffiti are likely to be added. Conversely, people carrying out graffiti attacks tend to move elsewhere if the graffiti are quickly and repeatedly cleaned off” (p.10). Repainting the surface is by far the most common
removal technique, despite the fact that it leaves the surface ripe for recurrences. Antigraffiti coatings, including special paints, were used by 70% of state agencies that responded to the Eck and Martinelli survey.

Other states used environmental design modifications to discourage graffiti artists. A structure’s visibility, surface properties (smoothness and color), and, to a lesser degree, accessibility are the features that best define its attractiveness to graffiti perpetrators. Wallace and Whitehead (1989) suggested that some surfaces are more susceptible to graffiti than others. Light-colored surfaces attract more graffiti than dark-colored surfaces do, and plain surfaces attract more graffiti than patterned surfaces do, because the marks are more easily visible. Applying a textured surface has been effective in reducing graffiti attacks on parapet walls. Modifications of the environment that reduce accessibility include the fencing off of the structure or the placement of large boulders or thorn-bearing shrubbery in front of walls. However, these are not as effective at reducing graffiti as changing the texture of the surface of the structure. Attempts to control vandalism through more surveillance and harder architecture may, in fact, act as a challenge to the ingenuity of the graffiti artist (Ferrell, 1995).

Indeed, Nickels’s (2004) casual observations of graffiti-prone areas of Philadelphia revealed that there was apparently little graffiti evident, because of the vigilance and swift action of the city’s Anti-Graffiti Network. The Network, however, eliminated graffiti only up to the first floor. Above this level, graffiti, according to Nickels, was rampant. The relevant authorities in Philadelphia have reported a dramatic rise in the incidents of acid-etching graffiti (Nickels, 2004). This form of graffiti involves the graffiti writer’s tagging or piecing glass windows with an acid glass-etching spray. A brief Internet search on September 1, 2004, revealed similar problems in Vancouver (City of Vancouver, 2003), Los Angeles (Knabe, 2001), and Christchurch (Christchurch City Council, n.d.).

New Zealand local authorities have implemented various schemes to reduce the incidence of graffiti. The Christchurch City Council implemented a graffiti eradication campaign (“Council Leads Fight,” 2000). Graffiti was painted over immediately after it had been sighted. The city council believed that writers would stop writing because the life of their work would be too short to justify doing it. The repainting scheme was coupled with the introduction of a free telephone hotline (0800 TAGGED) for the general public to report fresh graffiti and offer information that could lead to the arrest of taggers. In South Taranaki, the council painted a number of its buildings clover green because writers had previously avoided walls this color, probably because of the fact that graffiti came out poorly against the green (McClinchy, 1998). Recently, Queenstown has been faced with a graffiti
explosion that has seen the Lakes District Council commit tens of thousands of dollars to a new cleanup policy. Working on the principle that tagging breeds tagging, the district council committed itself to remove all graffiti within 24 hr of its occurring (Fea, 2001).

Solutions to the graffiti problem should be long lasting, possess an element of prevention, and be of relatively low cost. The current experiment sought to gather experimental data on the benefits of repainting over graffiti first with a base color, then with a mural design. This technique has been widely reported anecdotally (e.g., Barbosa, 1993; Wallace & Whitehead, 1989), but we could not find any systematic studies of this in the literature. It has also been suggested that involving community groups in these projects would make graffiti even less likely (anonymous reviewer, personal communication, May 30, 2002); however, once again, no systematic studies testing this hypothesis could be found in the literature.

It was hypothesized that graffiti writers would not write on the area covered by a mural but would continue to write on a blank wall. The mural would accumulate less graffiti because of the fact that writing would be harder to see on the mural (Wallace & Whitehead, 1989), and second, the writers would be likely to see the mural as belonging to somebody and respect the artwork (Callinan, 2002; Sommer, 1974).

METHOD

SETTING AND PROCEDURE

A well-graffitied concrete block wall was selected in the center of the city. Permission was gained from the wall’s owner to proceed with the experiment. Photographic evidence was taken of the original levels of graffiti on the wall and surrounding surfaces before the project commenced. The wall was scrubbed using roof cleaner to remove dirt from all surfaces, rinsed off, and left to dry. Sealant was then applied over all the graffiti on the wall, concentrating on the darker pieces to ensure that they would not show through the paint, once dry. Once the sealant had dried, a coat of paint was applied over the whole wall, restoring it to its original color of light pink.

The wall is located on the south side of an alley, which is a 2.5-meter-wide pedestrian thoroughfare between two major shopping streets. The east end of the alley opens out onto the main street sidewalk between two retail stores. The west end of the alley opens out into a private car park for workers in the surrounding shops; the car park opens out into the second shopping street.
The wall area where data were recorded ran for the whole length of the alley for a total distance of 31.5 meters. The wall was divided into three sections. Section 1 ran from the main street entrance for 13.4 meters on a downward gradient. Section 2 started where Section 1 finished, on the other side of a steel downpipe. Section 2 ran for 9.8 meters and incorporated the middle of the wall and a steel door surrounded by plywood that led to a storage area. Section 3 began at the end of Section 2 and continued to the end of the wall. This section was eventually covered by the mural and ran for 8.3 meters on a gradual incline (see Figure 1).

The experiment was a control group design with a preceding baseline. Before baseline, the existing graffiti was cleared off the wall, and the wall was painted over with a basecoat in its original color. The baseline condition lasted for 2 weeks. During this time, the wall was checked every 2 days for new graffiti. One new piece of graffiti was defined as “anything that is drawn, painted, etched, scratched or written on any surface visible to the public” (Anderson & Verplanck, 1983, p. 341). Most of these were in Vivid marker pen. There were also some in spray paint. The intervention condition followed, and a mural was painted onto Section 3 of the wall. The design was colorful and covered the whole area of Section 3, consisting of three large
humanoid figures, trees, paths, and little houses below a backdrop of mountains. This was the section furthest from the street. Section 3 was chosen for the mural because it had the highest number of instances of graffiti per square meter during the baseline condition. The intervention period lasted a further 2 weeks, with data collection on all three sections of the wall and reliability checks every other day. The follow-up period consisted of observers and reliability checkers counting additional graffiti in the three areas once a month, for an additional 3 months, following the initial investigation. The dependent variable was the count of new graffiti on each section of the wall since the last count.

RESULTS

Interobserver reliability was obtained by comparing the count of new graffiti in each wall section as measured by each observer. Reliability checks were made on every second observation day. Percentage of overall reliability was calculated using the following formula:

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\% \text{ reliability} = \frac{\text{days on which there was agreement}}{\text{total number of observation days}} \times 100
\]

There were 17 days of reliability data, with an average of 96% agreement. Section 1 had no days on which there were disagreements \((0/17 = 100\% \text{ agreement})\), Section 2 had 1 day on which there was a disagreement \((1/17 = 94\% \text{ agreement})\), and Section 3 also had 1 disagreement day \((1/17 = 94\% \text{ agreement})\).

Because of low numbers in the raw data, three Fisher’s exact probability tests (Uitenbroek, 1997) were used to check whether there were any significant interactions between section and recording period (baseline, intervention, and follow-up). During the intervention period, there were no new graffiti recorded in Section 3 (the mural area). To check if there was an interaction between section and condition, a \(2 \times 3\) Fisher’s exact probability test was used; it gave a significant overall interaction of \(p < .005\) between baseline and follow-up. Post hoc analysis (\(2 \times 2\) Fisher’s) showed that the change between baseline and follow-up in Section 1 (which attracted only two bits of graffiti in 5 months) was not significantly different from either of the corresponding changes in Sections 2 or 3. There was, however, a significant difference in the change between baseline and follow-up between Section 2 and Section 3 (the middle and mural sections), \(p < .0041\).
Comparing baseline and intervention by section (2 × 3 Fisher’s), there was a significant overall interaction, $p < .0002$. Post hoc analysis (2 × 2 Fisher’s) once again showed no significant level of difference between the relative baseline versus intervention graffiti rate in Section 1 and the other two sections. There was, however, a significant difference between Sections 2 and 3, $p < .0002$.

There was no significant difference between the follow-up and intervention data when all sections were compared (2 × 3 Fisher’s). Figure 2 presents the number of new pieces of graffiti recorded in each section during each phase of the study.

**COST VERSUS BENEFITS CALCULATION**

In the present experiment, the total cost of introducing and maintaining the intervention during the 1st year was calculated as NZ$770, and (extrapolating from the Section 3 baseline data) the reduction would be, on average, 6.92 pieces of graffiti per week. We can attribute 52 weeks of benefit to the 1st year’s NZ$770 expenditure. Six and 92 hundredths pieces of graffiti mul-
tiplied by 52 is 359.84 pieces of graffiti. The unit cost is the cost of decreasing the amount of graffiti by 1 piece. The total initial annual cost of NZ$770 divided by 359.84 pieces of graffiti is NZ$2.14 per piece of graffiti. This is the unit cost of one benefit in the 1st year. However, the estimated expenditure in subsequent years (where only touch-up work needs to be done on the mural) is NZ$161.50, and dividing that by 359.84 pieces of graffiti gives NZ$0.45 per item.

**DISCUSSION**

Our data supported the hypothesis that the mural (Section 3) would accumulate proportionally less graffiti during intervention and follow-up compared with baseline than Section 2. However, the amount of graffiti in Section 1 (next to the main street) was negligible in baseline, intervention, and follow-up, and consequently, there was no significant difference between the proportional increase (interactions between sections and phases) in Section 1 and either of the other two sections.

No graffiti was recorded on Section 3, the mural, during the initial intervention period. Graffiti was recorded on the mural during the follow-up and consisted of facial features and secondary sexual characteristics on two of the three humanoid figures depicted in the scene. Results revealed that the mural was subject to proportionally less graffiti than Section 2 during the intervention and follow-up periods compared with the amount they attracted during baseline. It is suggested that writers saw the mural as belonging to somebody and largely left the artwork alone out of respect for the artist (Callinan, 2002; Sommer, 1974). It is also posited that the mural provided a surface that was not conducive to graffiti, as the writing would be hard to see against the mural background (McClinchy, 1998). For whichever reason, the mural initially proved to be a totally successful graffiti deterrent as the graffiti writers did not attack the mural until 3 months after it was painted, and it attracted minimally obtrusive graffiti after that. During the follow-up months, significantly less graffiti was recorded on the mural than on the rest of the wall. Section 1 was hit less than Sections 2 and 3, on average. One reason this may have occurred is that attacking this area entails a greater risk of being caught because of its location immediately adjacent to the main street (Wallace & Whitehead, 1989).

Although the whole area was equally well lit, Section 3 suffered most during baseline, probably because it was furthest from the main street. When the
mural took up that space, Section 2 became the main target for graffiti. However, there was only approximately the same amount of graffiti deposited on Section 2 in 20 weeks as had been applied to Section 3 in the 2 weeks of baseline. Furthermore, the 15 bits of graffiti deposited on Section 2 during those 20 weeks was half the amount one would have expected when one extrapolates from the 3 bits that appeared there during baseline. This result could suggest a spread of inhibition from the mural area into the adjacent section. Another interesting occurrence during the mural phase was that observers informally noticed other forms of vandalism near the mural. These included the removal of brickwork from a small retaining wall and littering around the mural (empty vodka bottles and fish-and-chip wrappers). Also, considerable graffiti was put on the opposite wall of the alley during the entire experiment. Although no systematic data were recorded for this wall, the occurrence of graffiti raises the possibility that the mural was shifting the focus of the writers’ attention barely meters away.

Graffiti recorded in Section 3 during baseline took the form of tagging, with nicknames and symbols the most prevalent. This tagging was predominantly in heavy black marker. The tags were answered, as Ferrell (1995) posited, by another communication, this time written in blue Vivid, “All your base are belong to us.” This phrase was later identified as the name of a Korean computer game popular in the 1980s but also suggested a communication of threat to the writers of the tags. Also during baseline, in Section 2, a centrally located tag in the middle of the door was stylistically similar to the tags found in Section 3 and appeared to be written by the same person as it was recorded on the same day. Again, this was replied to by the following recording day by the blue Vivid. Section 2 also had the word Devlin written on it in light blue felt tip; this was different from the aforementioned graffiti. Section 1 remained untouched throughout the intervention except for the word Neutral written in light Vivid and one wavy silver spray-can line.

The cost-benefit analysis showed that amortized across 1 year, the cost (per piece) of reducing graffiti by using a mural as a passive thematic prompt was NZ$2.38 in the 1st year and NZ$0.50 in subsequent years. This was of relevance for the owner of the wall, who had essentially given up on buffing out the graffiti. Although murals do not necessarily extinguish or prevent graffiti from occurring, there is evidence that they can help to discourage graffiti attacks.
REFERENCES


