Highway from hell! A case study on psychosocial impact monitoring.

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The Psychosocial Monitoring Process

This presentation concerns the main results of a psychosocial monitoring of the construction stage of the final section of the Algarve Highway (the second most important in the country). The monitoring stage is part of the whole psychosocial impact assessment process, which concerns the analysis of both people’s perceptions regarding several situations implied in such an environmental event and the consequences these perceptions might produce with regard to the physical and psychological welfare.

In order to accomplish these goals, a three step monitoring process was designed and implemented. Before the construction started, the data from the public consultation were examined through a content analysis of the opinions expressed by several individual or organized stakeholders. The results obtained enabled us to identify dimensions of potential local problems which people expected to result from the construction as being potentially fearful or annoying. These in turn inspired the design of a questionnaire that guided the interviews conducted in the third step. Meanwhile, the villages surrounding the construction site were visited in order to pinpoint the priority areas, those where we expected the construction would have the most negative impacts and therefore those where the interviews would be conducted. Amongst the most affected areas, two priority levels were defined reflecting the degree of exposure of the houses to the construction hassles, according to the proximity to the construction site (i.e., more or less than 50 m) and the (non)existence of protective barriers (e.g., a hill or a dense set of houses between the target house and the construction site). Finally, then, sixty-four door-to-door interviews were conducted with people from thirteen villages which had been identified as priority areas.

The questionnaire design was inspired not only by the public consultation data analysis, as mentioned before, but also by the stress literature. Successful stress models, as the one by Lazarus (e.g., Lazarus & Folkman, 1984) and Palma-Oliveira (1992), portray environmental stress as a psychological process. The accurate diagnosis of the psychosocial impact of a potentially stressful event can not go without the careful examination of the variables that play a part in this process, which we will identify in a while.

This is one of the aspects where the present approach differs from other ones. Other social impact practitioners limit the assessment process to a costs-benefits analysis, merely emphasizing the social-economical consequences of an event. This widespread stream of social impact assessment disregards impacts of a different nature, such as psychological distress, arguing these are not amenable to objective measurement or
quantification. We, on the other hand, agree with the few (albeit increasing) those that argue that “to respond effectively to environmental problems, policymakers must know as much about the social, emotional, and behavioral impacts of environmental threats as they do about the biological effects of such hazards” (Wandersman & Hallman, 1993, p.681).

Returning to the questionnaire, a set of items were used to measure the attitudes toward the construction and the responsible authorities, perceptions of the degree of impacts, risk, and control, coping strategies, local identity, and the degree of annoyance felt. Participants were asked to report if they agreed or disagreed with certain sentences concerning the highway construction, in 5 points Likert scales (from 1 - “I totally disagree” to 5 - “I totally agree”). The items were grouped in several scales corresponding to the variables. The reliability and the variance explained by these scales are remarkable; alpha is between .90 and .70 and the variance explained ranges from 50% to 80%. The questionnaire also aimed to assess the physical health impairments (e.g., headaches, allergies) and damages to houses’ infrastructure which participants attributed to the highway construction. Responses for these items were coded in a 2 points nominal scale. Next, the State/Trait Anxiety Inventory (Silva & Santos, 1999) was given to the participants in order to evaluate if the highway construction had led them to feel more anxiety that the one they usually experienced. Finally, people were asked to report some socio-demographic data (e.g., gender, age).

**An Environmental Stress Model and Results**

In order to account for the results obtained we leaned on an environmental stress model, which consists of the merge between those already mentioned. This model starts with a central assumption, which further increases the differences between our approach to social impact assessment and others’. According to our model, the environmental stress process is triggered by the perception of threat to the physical or psychological integrity of the individual. This not only means that the same event can be stressful for one person but not for another, but also that it is not necessary that a “real” risk exists; if the individual believes that there is such a risk or annoyance, the consequences to the person’s well-being will be quite real all the same.

In the present case then, what would be the stimuli amenable to be perceived as stressful? Almost everything, we think! The scenario in the areas identified as priority ones was indeed impressive. The walls were full of cracks as was the pavement in the roads where the trucks and heavy machines for the construction passed. The noise was persistently high, a situation aggravated by the unpredictable sudden bursts caused by specific construction operations, such as the detonations necessary to the removal of earth. Both the intense and unpredictable nature of the noise are known to cause emotional distress and cognitive performance deficits. The dust concentration in the air was very high, affecting people’s breathing and hygiene routines as well as the amount of dirt in the facilities. In a nutshell, pure hell!

As we said, what triggers the stress process is the way the individual appraises the stimuli or situation in terms of its meaning to his or hers welfare. It’s as if the organism was being asked if the event is risky. This appraisal is influenced by several factors, such as features of the stimuli, the resources individuals perceive in themselves to confront the situation, or the attitude they hold toward the event.

With regard to the first two variables, Lazarus proposes that individuals judge the menace potential of the event on the basis of a double appraisal process. The risk
perception is the joint output of the primary appraisal, the demands perceived to be imposed by the environment, and the secondary appraisal, the resources individuals perceive to possess in order to face those demands. Note that these resources don’t concern solely personal resources. Authors such as Rothbaum, Weisz, and Snyder (1982) distinguish between primary control, the perception or belief that one can mitigate the aversive properties of the situation, and secondary control, the belief on the availability and willingness of others to help make things safer. In other words, then, if the individual perceives that the event poses a high amount of demands and if he does not believe himself or common support entities to have what it takes to deal with these demands, the event will be perceived as risky.

On the other hand, Palma-Oliveira (1992) proposes that when exposed for a long time to an event, the individual will form an attitude toward the event, and that it is on the basis of such an attitude that the individual will automatically judge the risk implied in the event. In other words, if the attitude formed in regards to a specific event is negative, there is greater likelihood the event will be appraised as a menace. Such a proposal is supported by similar research (e.g., Eiser, Popadec, Reicher, & Stevenage, 1998) where it was found that when attitudes were accessible they guide judgments of features of an environmental event such as its polluting potential and the risk involved.

Looking at the results, all the conditions were gathered to elicit a perception of high risk from the individuals appraising the highway construction: attitudes towards the construction fell between neutral and negative points (M=2.81; SD=1.33), and perceived control was low (M=1.52; SD=0.83). As expected, the perceived risk was moderately high (M=3.50; SD=1.27).

Having responded “yes” to the question “is this event risky”, the model proposes that an alarm reaction follows, whereby the organism calls to its resources to cope with the aversive event.

Then we enter what stress models call the resistance stage, where the individual will try to use some strategies to cope with the event. Lazarus proposed two kinds of coping strategies that the individual can use in order to reduce stressful potential of the event: either he uses manipulative coping strategies, whereby he will try to directly manipulate the event and its stressful features, and/or he uses accommodative coping strategies, whereby he will try to accommodate him or herself to the event, that is, he will try to engage in psychological defense mechanisms that enable him to appraise the event as safer. Examples of the latter are denial (turning the thoughts away from the aversive properties of the event), social comparison (comparing oneself with others in a similar or worse condition), and secondary control beliefs (beliefs that authority entities such as the government, the technicians or God himself can help make things safer and hence more endurable). In either way the goal is the same: to reduce the perceived negative impacts of the event.

As the individual keeps on trying without success to deal with the situation, its coping resources eventually run out and he or she enters what stress models term the exhaustion stage. In the present case, we have very strong evidence pointing to a clear exhaustion stage, considering the coping resources burnout. Results tell us that these people are not engaging in coping strategies of any kind.

In light of this inability to deal with the demands posed by the highway construction, it was expected an array of psychological and physical problems that make up the chronic stress syndrome. Results show that over 50% of the participants reported
having more headache, allergies, fatigue, as well as breathing, concentration and sleeping problems ever since the construction had begun. Underlining the role the stress process played in this physical health collapse, positive significant correlations were found between the several physical effects and risk perception (note that this correlation is never less than .32, p<.05). More still, it is reasonable to think of some of these people as being in a learned helplessness condition (e.g., Seligman, 1975), whereby they generalize the sense of inefficacy that resulted from the inability to confront or adapt to the construction to other parts of their lives and form invariably negative expectations.

Hell on Earth!

This is where we come to title of the presentation. If you are not yet convinced of how hellish this highway construction really is, just wait and see… To make it all the more obvious, let us review the consistent evidence commonly found on adaptation to environmental disasters or stressful life situations in general. In distressful cases, such as the ones of those inhabiting in a high seismic risk area or fighting breast cancer, for example, researchers invariably face themselves with a very interesting phenomenon: when confronted with an aversive event, individuals resort to psychological defense mechanisms that bolster their sense of well-being. In the first example given, living in a high seismic risk area, individuals were found to engage in illusory control beliefs, namely that God or scientists would somehow see that they never had a fatal earthquake (Lima, 1993). In the second case, Taylor (e.g., 1983; Taylor & Brown, 1988) found that breast cancer patients compared themselves with patients in a similar or worse condition, thus believing they were not so bad after all. These defense mechanisms are nothing but types of the accommodative coping strategies already mentioned, that is, the individual does not change the objective setting that surrounds him but engages in beliefs that allow him to get along better with the situation. However, when we look at the present set of data, we realize that nothing similar is occurring. With regard to control beliefs, illusory or not, it is clear that they are absent of these individuals’ minds (M=1.51; SD=0.82), as they did not trusted none of the authorities (M=2.45; SD=1.08). More impressive still, are the results concerning the social comparison these people are doing. Contrary to what might be expected from research on cognitive adaptation in the cases mentioned before, these individuals in general believed themselves and their families to be no better than others. No differences appeared between the annoyance, impacts and consequences perceived for the individual when compared to others (respectively, M=4.53 vs. M=4.50, t=0.44, p=0.66; M=2.45 vs. M=2.35, t=1.23, p=0.22; M=2.21 vs. M=2.31, t=0.62, p=0.54). It is, then, reasonable to believe these people no longer have the resources necessary to engage in these kinds of defense mechanisms. We were already impressed by these results when an even more astonishing one appeared: with regard to the risk perception, there was a reversal of the expected pattern, i.e., the risk perceived for others was lower than that perceived for the individual himself (respectively, M=2.58 vs. M=3.54, t=2.84, p=0.006).

Searching for Differences

Convinced of how bad things really were in this case, as we presume you already are, we asked ourselves the question “Is it that bad for everyone?” In other words, “Is hell this hellish for everyone?” Couldn’t we find, as Taylor and others did, some individuals who got along better than others?
We then decided to look at the situation from a different angle and further examine the data in order to explore the effects of three independent variables. First, we considered how exposed individuals’ houses were to the hassles coming from the construction labor, considering the two levels of exposure mentioned earlier. Second, we considered whether the individuals would be able to benefit from the highway once it was built, that is, whether a highway access knot was being built in their area (i.e., objective gain). Finally, we considered whether the individuals thought the highway would benefit the area (i.e., perceived gain).

It’s plain to see that the first two variables refer to the objective favorableness of the setting and not how favorable that setting was perceived to be. Remember what we said before, namely that stress is all about perception? Why, then, would we want to look to the objective situation individuals are in? The answer is that one should not interpret what was said as rendering useless an objective characterization of the situation individuals are in. We know perception mediates the relation between a real object and the individual’s response to the object. However, we also know that, with few exceptions in the realms of pathology, a person will not see black where there is white. In other words, it is logical to expect some predictive power in the objective characterization of the situation.

The first noteworthy set of results is that all three variables allow us to distinguish between groups of persons with different feelings and perceptions about the highway construction. In fact, annoyance, perceived impacts, risk and primary control all differ in the expected way when comparing more exposed individuals with less exposed ones (M=4.11 vs. M=3.34, t(62)=3.74, p=.0005; M=3.3 vs. M=3.1, t(62)=5.51, p=.00001; M=3.4 vs. M=3.94, t(62)=4.22, p=.0008; M=3.15 vs. M=2.9, t(62)=9, p=.05); individuals in an objectively benefited area with individuals in an objectively nonbenefited one (M=3.98 vs. M=3.95, t(62)=4.2, p=.00009; M=2.71 vs. M=3.98, t(62)=4.92, p=.00007; M=2.63 vs. M=3.79, t(62)=3.45, p=.001; M=2.39 vs. M=1.64, t(62)=3.65, p=.0005); and individuals who perceived benefits in the highway with individuals who thought the opposite (M=3.94 vs. M=3.34, t(61)=2.68, p=.01; M=3.92 vs. M=3.29, t(61)=2.38, p=.02; M=3.87 vs. M=2.98, t(61)=2.9, p=.005; M=1.58 vs. M=2.23, t(61)=3.44, p=.0001).

In a glance, there seems to be two kinds of groups: the less exposed individuals and/or those benefiting the existence of an highway knot and/or those who perceive benefits associated to the highway, with lower levels of annoyance, impacts estimates and risk perception and a higher primary control; and then the others, with higher annoyance, impacts estimates and risk perception and a lower primary control. To sum it up, the results identify two kinds of groups which differ in how much their members feel the situation. However, this doesn’t mean that individuals in less worrisome situations were living in paradise; things were looking bad for everyone in general… but for some it was worse than for others.

The second interesting set of results concerns the interactions between the objective and perceived features of the setting. In order to explore this, MANOVAs were conducted where the independent variables were a) the two levels of exposure and the perceived benefit or b) the objective benefit and the perceived benefit, and the dependent measures were annoyance, impacts estimation, perceived risk and control and expectations.
Here a consistent pattern appeared whereby those in an objectively more favorable condition (i.e., living in a less exposed area or near a future highway access knot) and who were able to see some good in the situation were always in a better condition, i.e., felt less annoyance (respectively, $f(1,59)=.14$, $p=.0002$ and $f(1,59)=1.78$, $p=.04$) perceived smaller impacts ($f(1,59)=.11$, $p=.0002$; $f(1,59)=.74$, $p=.002$), risk ($f(1,59)=.46$, $p=.0002$; $f(1,59)=.29$, $p=.02$), and primary control ($f(1,59)=.18$, $p=.0002$; $f(1,59)=.08$, $p=.007$), and had better expectations ($f(1,59)=.47$, $p=.007$; $f(1,59)=1.86$, $p=.07$) than those who were in an objectively more unfavorable condition (living in a more exposed area or distant from the future access knot) and who did not see any good in the highway (Tukey honest significant difference for unequal n).

Somewhere between the two were those who were either in an objectively more favorable condition but who did not see how the highway would bring any advantages to the area, or, on the contrary, those who were in an objectively less favorable condition but who saw some good in the fact that the highway was being constructed in their area. Although the pattern for these last results is consistent for all the dependent measures, it doesn’t reach statistic significance.

Concluding Comments

These results of the present monitoring suggest the remarkable power of perception, like demonstrated by the differences in the well-being of those who perceived vs. did not perceive advantages in the highway; but they also suggest that it can only go so far, given that individual weren’t able to see black where there was white. This is why the most extreme results were found for those cases which satisfied both conditions, that is, those who were simultaneously in an objectively more (or less) favorable condition and who perceived their condition as more (or less) favorable.

Finally, had we ignored people’s perception and we would have surely looked at the situation with the narrow-minded perspective of all those social impact analysts whom so often and easily dismiss the public opinion as irrational or selfish (see Freudenburg & Pastor, 1992). Quite on the contrary, these individuals responded in a rational fashion to the situation they faced and perceived.

References


