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*noise notes* is published quarterly by  
***Multi-Science Publishing Co. Ltd.***

5 Wates Way, Brentwood, Essex, UK

Tel: +44 (0)1277 224632 · Fax: +44 (0)1277 223453

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# The Interpersonal: A route towards misperception and failed resolution for low frequency noise complaints

**Stephen Benton and Orna Abramsom-Yehuda**

*Human Factors Research Group, Department of Psychology, University of Westminster, Regent Street, London, UK*

## 1. INTRODUCTION

The common theme to which many Low Frequency Noise (LFN) researchers subscribe is that here is a phenomenon that is consistently poorly assessed and under rated in terms of its status as an environmental pollutant (Benton & Leventhall, 1994, Persson-Waye 1995, and Bengtsson et al, 2000). The difficulties surrounding the development of an effective and systematic approach to the quantification of LFN incidence and effects have centred upon source detection, location and estimates of annoyance. The quantification and standardisation of each and all of these aspects has been complicated by the role played by significant 'individual differences' of sensitivity to LFN, combined with the relatively low Sound Pressure Levels (SPLs) commonly associated with disturbance, annoyance and stress (Persson-Waye et al, 2000). The authors suggest that whilst research has sought to clarify issues of measurement and subjective effects as discrete variables, in practice, Environmental Health Officers (EHOs) are required to resolve noise complaints whose character is a composite, one that results from a continuous interaction of all three of these areas.

This paper examines the behavioural ingredients, argued to characterise LFN related complaints in particular, which act as confounding variables shaping and distorting the information context between the complainant and EHO. It is also

suggested that a renewed examination of this psycho-physical context and the behavioural clues within it, may offer a wider range of options to EHOs in developing jointly-owned and enduring solutions.

The initial point of contact between the complainant and EHO contains numerous routes to misperception, distorted information and failed grounds for mutuality of confidence. It is likely that the tacit content overwhelms the explicit as both criteria for assessment and communication of LFN events are subject to failed validity. This has partly resulted from a restricted development of effective and systematic LFN 'complaint-handling' methodology which has meant that EHOs are usually reliant upon existing dB(A) driven physical assessment protocols, when initiating case assessments. The initial phase of noise assessment is an important element in determining the quality of the psychological contract within which both parties involved in the assessment will need to work. As the assessment protocol unfolds so will questions, issues, interpersonal exchanges and judgements, each of which, if not prescribed by, will determine the type of assessment performed. If the assessment made of the physical quantities is skewed then the associated analyses and consequent interactions between the parties will likely to be subject to distortion.

This paper outlines how the quality of the 'interpersonal' and the associated

## *low frequency noise*

### *legislation and standards*

dimensions of behavioural distortion may occupy a pivotal role, one of the disproportional importance, for the LFN complaint-resolution process. On balance, the clarity of assessment criteria will be matched to diagnoses, judgements and associated behaviours. However, those instances where established protocols are experienced as inadequate may often prompt a set of behavioural exchanges, which evolve into an active ingredient (symptom) of the noise complaint. The complainant's experience of the noise is likely to be reported as worsening, in correlation with the decline of confidence in the EHO's intervention. Subsequent interventions and interpretation of data/reports will be perceived against the background of competing views and divergent interpretations. It is symptomatic of LFN problems that such unresolved issues become active barriers to subsequent trust in the EHO's recommendations and communications often are recorded as difficult or combative. The process is closely allied to failed negotiations, where the participants learn to elaborate opposing defences rather than to develop common working ground, ground that could support less than perfect solutions. The tendency is for the complainant to anchor views around an absolute solution to the problem rather than a procedural and stepwise approach. Perhaps, more than most noise complaints, the LFN complaints requires application of an approach that supports the psychological processes involved as much as the psycho-physical.

The quality of the interpersonal exchanges plays a major role and the nature of the complaint under assessment is prone, and it is suggested more prone for LFN, to change in response to the interpersonal. Experiences of the interpersonal 'contract' can interact with complainant symptoms, leading to recruitment and

intensification of symptoms (e.g. more uncertainty, less trust, increased sense of isolation and worsening sleep patterns) which then further interact with the HO relationship.

Perhaps an improved behavioural contract, for LFN cases, between the complainant and the EHO would contribute to earlier agreed outcomes and a sustainable resolution to the problem. Given the larger amount of time it currently takes to bring LFN cases to closure it's likely that they place a heavier burden upon this contract than that associated with the majority of noise complaints. The capability of EHOs and related health care agencies to provide effective assessment, practical advice/solutions and to build jointly owned criteria of resolution with complainants, are integral and confounding elements within complainants experience of exposure to LFN.

The symptoms described by complainants routinely include classic stress effects and it possible that failed resolution and limited routes towards building agreed outcome criteria combine with the physical and psychological features of the LFN acoustic signature and act as a second order stressor.

## **2. BACKGROUND**

Most assessments of LFN, as an environmental pollutant, have necessarily centred on comparisons made against other noise impact criteria. Such assessments of impact are guided by reference to a number of established impact criteria and associated categories/dimensions of subjectivity which include, speech intelligibility (ISO, 1975) annoyance, sleep deprivation and performance degradation (Cooper and Quick, 1999). Each of these categories has seen the development of empirically based protocols which, under well defined

conditions of exposure, have led to the production of criteria designed to protect health and the quality of life as captured within increasingly internationalised standards. This trend is in response to the rapid and widespread growth in technological developments that range from the large scale industrial to the individual scale, domestic. Clear-cut procedures of assessment and weighting are available for a number of key 'noise impact' categories including *annoyance*. The widespread application of standards and measurement techniques are an indication of the extent to which subjective and physical attributes of an 'impact' have been reliably correlated. However, as proponents of separate or discrete weighting networks for LFN are likely to note, this reliability has not been extended to include the effective handling of LFN complaints, with principal difficulties associated with exposure to Low SPL of LFN.

Empirical findings have provided for a raft of guidelines, objective measurements and a procedural body of evidence which provide the EHO with ways in which to quantify the physical noise signature, permitting clarification of complainants experiences and reported symptoms. Effective quantification enables all parties to the complaint to identify the source, or likely source, to agree upon existent and perceived levels of the noise and to implement steps taken in order to tackle the problem. This level of understanding and co-operation forms an essential part of the puzzle for the complainant, which serves to validate, in explicit terms, their individual experience. The increased access to and sharing in, professional and expert explanations of the physical parameters contribute to regaining a sense of control over their environment. Before the complainant is able to regain control they will need to be able to utilise concepts to explain both the 'behaviour'

of the noise and their experience of the noise. The expertise provided by the EHO acts as neutral ground, upon which a common language of representation and explanation will operate. From this the complainants are able to seek and achieve a degree of consensus and support for their situation, symptoms and anxieties.

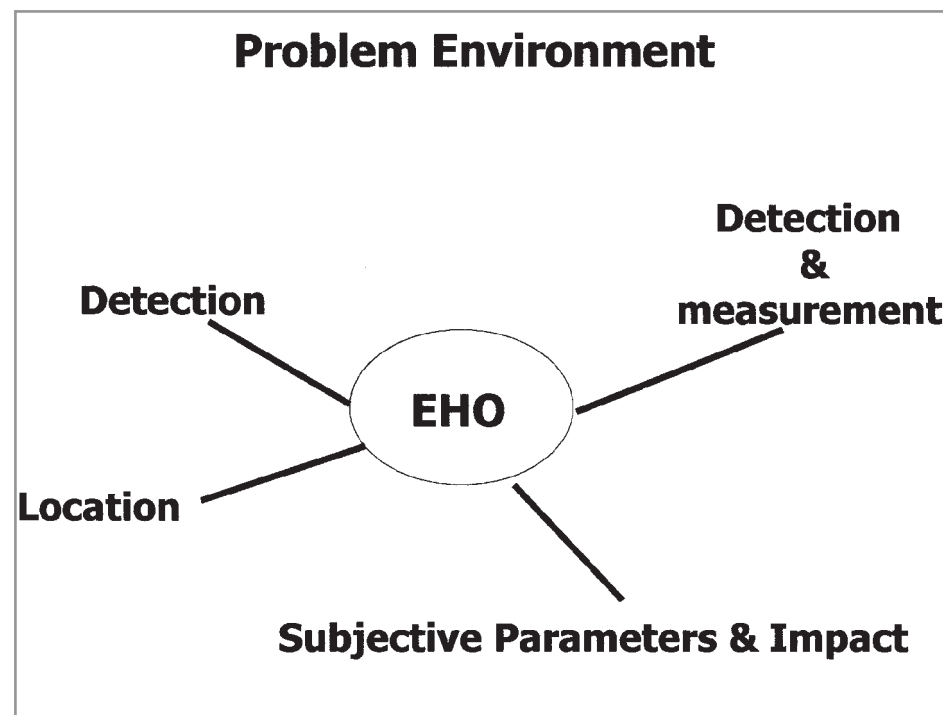


Figure 1 *Problem environment for the EHO and complainant: four key categories that set the context within which resolution can occur*

The features shown in figure 1 comprise the stepping stones towards resolving the complaint. If any one of these is missed, the prospect of a fully and mutually agreed resolution is unlikely. The format for a solution is understandably based upon an ability to assign positive values to each of these categories, although for 'location' it is feasible that a zero value would be treated as equivalent to a positive within the problem environment. However, the problem to be solved is likely to change with time. The categories within which values are assigned are neither passive nor exclusive and represent a higher order of problem to be solved, one that is dynamic. The psychology trajectory

of a complaint, over time, will play a vital role in determining the type and quality of eventual outcomes. As illustrated in Figure 2 both the physical exposure and psychological consequences will combine to impact upon the complainant and act to shape the symptom response (a coping behaviour, either ineffective or effective) to the perceived problem environment. The figure indicates how the EHO may become just another 'impact' factor experienced by the complainant within the problem environment.

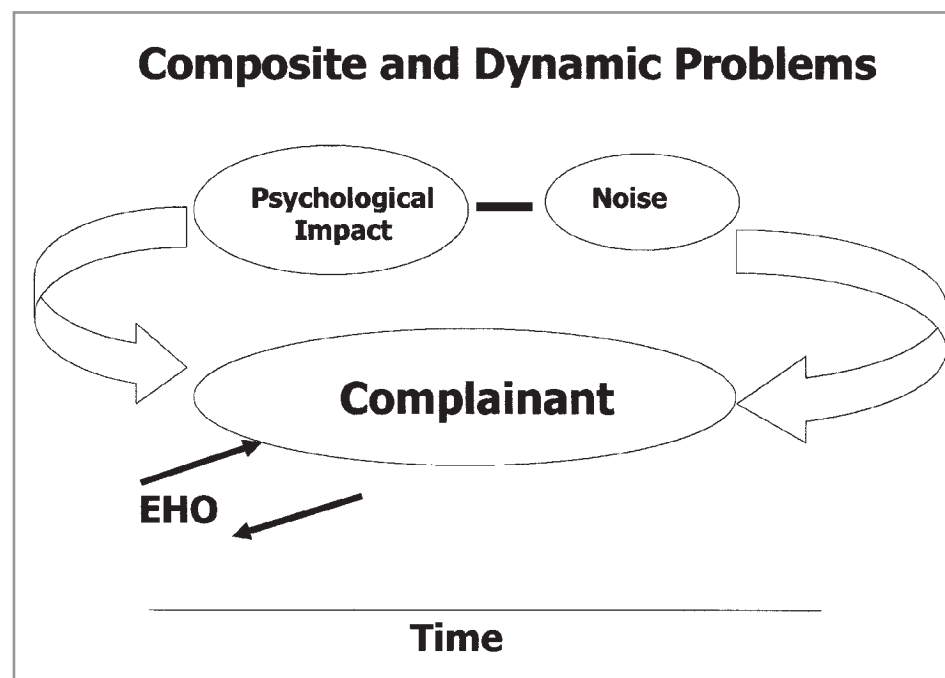


Figure 2 *Composite and dynamic problems*

The Primary Constituent Categories are Psychological Impact and Noise Exposure, the starting point of any resolution irrespective of the quality of measurement values assigned.

The amount of time spent exposed to the combined impact of the psychological and acoustic properties of the problem, will, for LFN cases in particular, lead to a change in coping capacity with consequent changes in the symptomatology and 'problem' to be resolved. It would not be an independent psychological process,

rather a composite. The suggestion is made that the EHO's intervention could benefit from treating the time line as a symptoms continuum, such that behaviour now should be shaped to inhibit those symptoms and behaviours likely to emerge further down the time line.

Complainants report that one of the most debilitating aspects of noise is its 'intrusiveness'. They lose control over the quality of sound in their personal environment. The need for EHOs to address the psychological impact of noise is an integral element in initiating steps that will build an effective intervention and resolution. The subjective problems associated with the physical impact of the stimulus occupy one level of psychology, this can be assessed in relative terms of interference, loudness and pitch (intrusiveness) and to some degree annoyance. The secondary and subjective impact of this process originates from the methods of assessment themselves, which to a large extent shape the type and quality of interpersonal understanding that results. The interpersonal, initially an artefact of the process gradually assumes the role within the problem environment as symptomatic of dysfunctional behaviour.

It is in this area of the interpersonal that LFN is particularly likely to be problematic for the EHO. Part of the difficulty results from the incongruence between the complainant's experience and the EHO's findings. It is characteristic of LFN cases that initial assessments may at best downplay the noise as a problem or at worse measurements taken fail to substantiate even the existence of a noise. All of which is compounded by the fact that usually by the time the EHO is called in individuals would already be experiencing unwanted subjective effects. The EHO may already be placed in a position of meeting unrealistic



demands for cessation of the problem, demands that are indicative of an ongoing noise context that has already imprinted itself upon the complainant's behaviour and expectations. An example of this behavioural context is shown in Figure 3, where complainants descriptions of subjective and cognitive states have been organised around the main and common theme of coping.

The complainant at some point along the time line shown in figure 1 will be experiencing the elements shown in Figure 3, on an increasing scale as they move along the time line, with consequent development of symptoms, attitudes, beliefs and expectations about and of the EHO. As one form of coping fails another may emerge, but at a cost. The EHO may well be confronted by an increasingly defensive and resistant complainant, the further along the time line they are and associated with defensiveness may be a focus that narrows until it is anchored around a few issues, the pivotal elements of the complainant's problem environment. These elements may be freely expressed, tacitly held or a combination of both. If the interpersonal relationship between the EHO and complainant has failed then the level and quality of information exchanged will also become degraded because few consensually agreed and explicitly criteria remain viable between them. This results in stalemate and a problem environment with opposing views anchored round apparently poorly selected information.

### 3. OBJECTIVE AND SUBJECTIVE PARAMETERS

The question of central value to the issue of improving the basis for the interpersonal is to what extent assessment procedures are able to respond to the contextual psychological aspects associated with noise complaints. Clearly the influence of

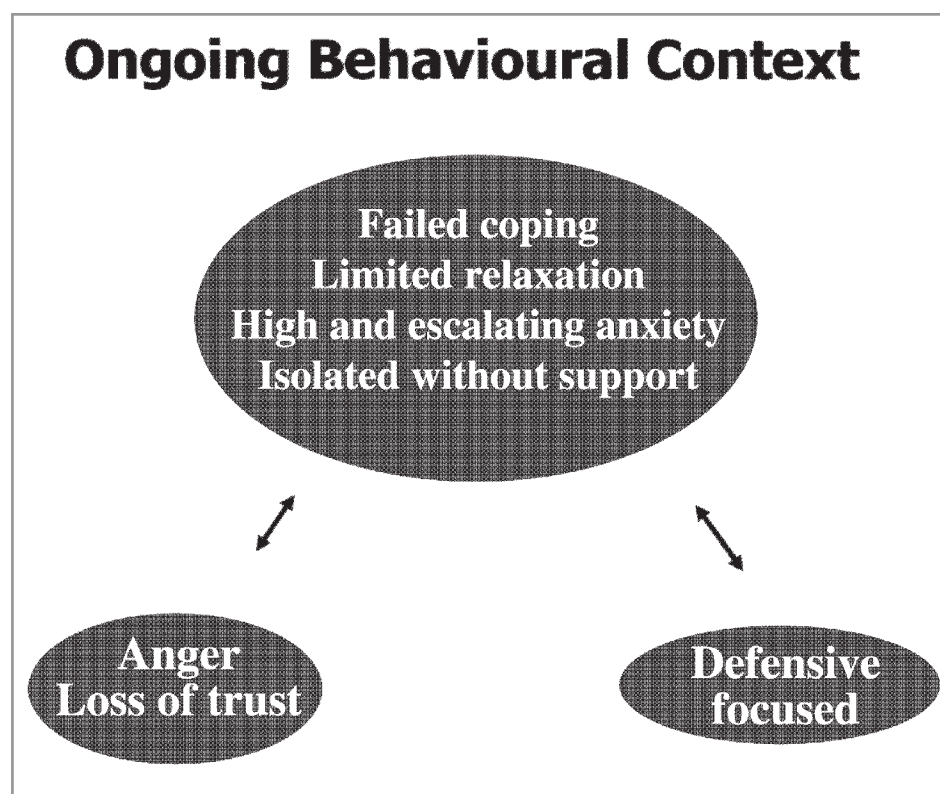


Figure 3 The central role of failed coping: an important factor in LFN complaints and the quality and type of information made available to the EHO

contextual matters will vary in respect to how well the assessment procedures are calibrated to the noise signature. For LFN cases, where a widespread and standardised measurement protocol has yet to be established, there is a high probability that a mismatch between objective measurements and contextual psychological aspects will characterise the situation. It is argued that it is essential to provide a 360 degree approach to the problem, one that includes both the physical, psychological and the contextual. It is likely because of the initial and short term low impact profile of LFN that by the time the EHO arrives the noise impact has already registered with the contextual, influencing the quality of communication. The feature here being that the complainant has developed a way of making sense of their experience within the terms of reference accessible to them and consistent with the overall behavioural context (e.g. their

understanding of how and why the noise behaves the way it does). The rules and justification for a complainant's personalised context may be difficult to communicate and are often supported by perception of implicit relationships rather than the explicit and objective ones. This form of implicit relationships (experience that is difficult to communicate and demonstrate to others because it has been thoroughly internalised) is characteristic of expert knowledge in that it has tacit validity. While tacit knowledge is frequently valid and leads to coherent personal judgements they are notoriously prone to confirmation bias, Kaufman, 1990). The individual tends to seek for confirming instances, in order to sustain an internally consistent evaluation of their experience while disregarding or downgrading instances (findings) that run counter to their evaluations. In this way the tacit assessment criteria are sustained.

manner that would be common to others if they had shared the same route to acquiring it! Many complainants report that EHOs undervalue the distress that they are experiencing and this often becomes a confounding aspect in subsequent exchanges. The context of experience for the complainant fails to be translated into accessible concepts likely to be achieved through the application of objective assessments. The common ground sought by the EHO, from which to 'make sense' of the complaint, fails to hold as the evidence does not support the context within which the complaint is observed.

The problem environment may benefit from bringing to bear a new and explicit frame within which to assess the problem and to develop a solution. If the interpersonal trajectory could be placed upon a systematic basis such that protocols for information gain and representation could be formalised and focused upon the dynamic nature of the LFN case, as illustrated in figure 1.

In Figure 4, the behavioural context is outlined against examples of the principal components found within the process of interpersonal negotiation. It is suggested that one way forward, a way that may improve the quality of information built between both parties within the problem environment, could be found by applying negotiation and dispute resolution practices. Such practices are able to work with opposing views, generating and creating routes towards gathering information (including different perspectives on the same material), based upon a problem solving relationship rather than that of dependence. Rather than assessment criteria acting as the final arbiter of the outcome, under conditions of LFN the wise option may be for the EHO to adopt the mind frame of entering a negotiation rather than simply that of a noise assessment. Hence the need for a pre site visit questionnaire that will perform the function of profiling the

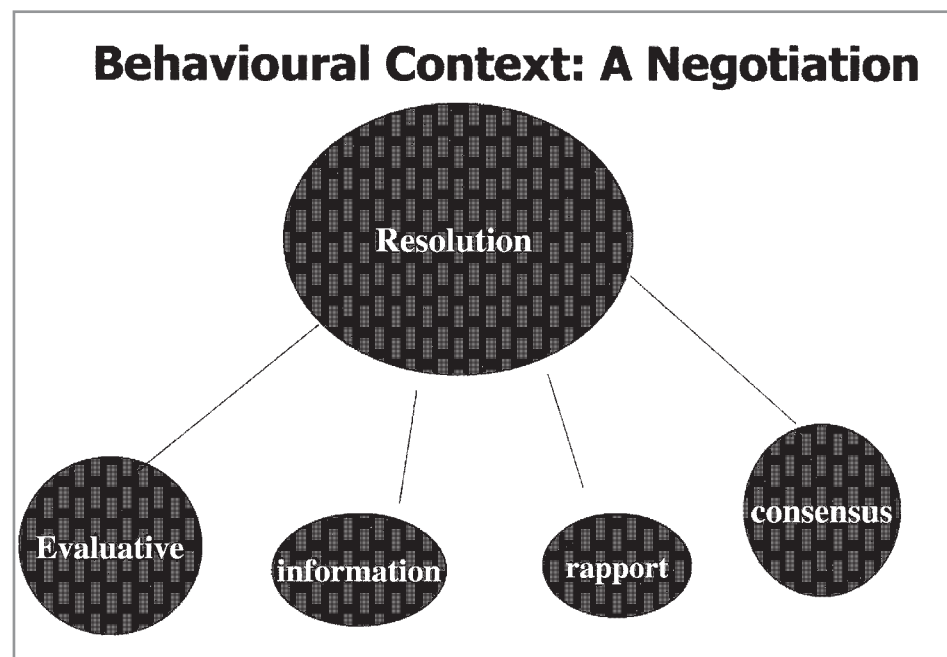


Figure 4 Title: Behavioural context: LFN solutions, a negotiation between both parties

This is not to suggest that a dissociation from reality has occurred, far from it, it is just as likely that the experience has been interpreted in a



case and estimating the likelihood of a LFN or non-routine noise complaint, where the interpersonal may act in a pivotal form. The type of information and criteria active in these cases are both explicit and tacit, and the challenge is to reconcile emotional investments (often polarised) that are made by both parties, in their preferred (and often in the absence of acceptable and explicitly benchmark criteria) personalised criteria.

The approach outlines examples of the negotiation milestones (functional objectives) that guide the interpersonal through a format that could also act as a protocol for EHOs. The tacit knowledge developed by the complainant, during the long process of coping with that which does not conform to the usual rules of coping, often takes on the form of a language that is private and inaccessible to others, including the EHO's perspective. As the explicit criteria fail to validate the complainant's experience (the EHO soon assumes this status), the tacit elements supporting their construction of events may assume an increased, yet still tacit, validity. The difficulty with tacit beliefs and knowledge is that of direct correspondence. The strength of belief is often infused by the tacit, in a manner that just escapes ease of description or justification and can have a damaging effect upon perceived quality of information. Figure 5, represents how the transition from a reliance upon explicit to that of tacit knowledge can occur as complainants search for ways in which to re-validate their personal experience of the problem environment.

#### 4. TACIT KNOWLEDGE AND THE INTERVENTION PROCESS

The perception of failed coping reduces as the complainant is propelled away from the 'explicit' base, as here the strength of disconfirmation is at its highest. As the complainant rejects the

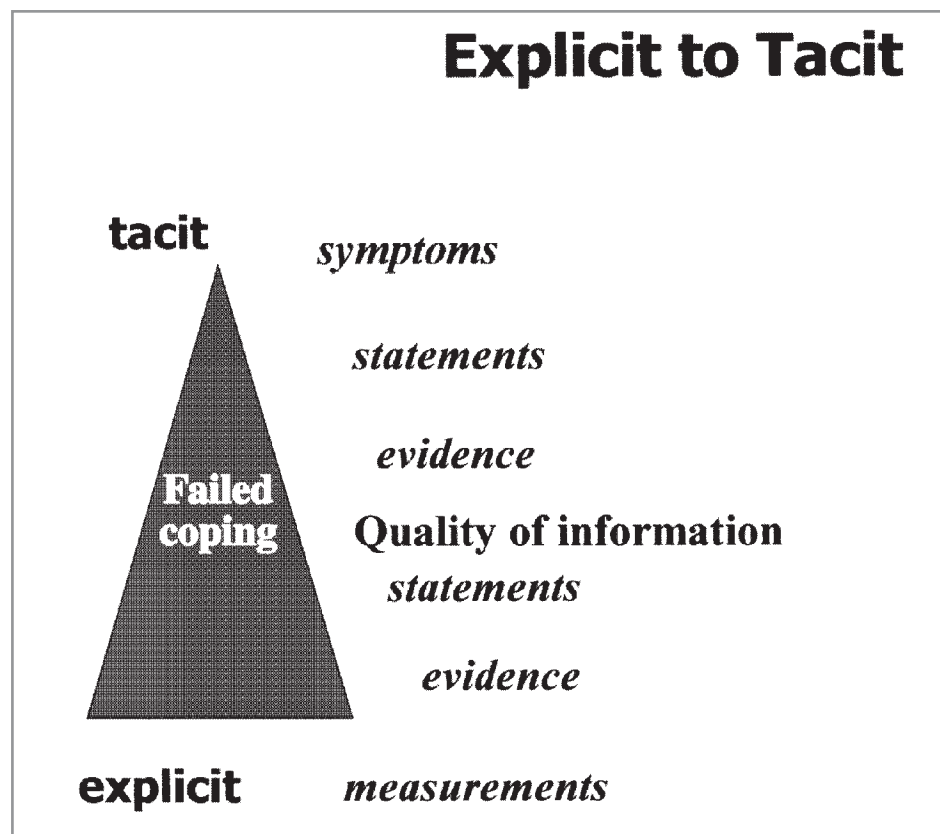


Figure 5 *Title: Explicit to tacit: the personal journey to isolation*

explicit, the reliance upon the tacit grows and 'perceived' failed coping reduces. However, the impact of the ongoing exposure is not decreased and in the face of absolute rejection at the base of the triangle, complainants may find themselves pulled by an implicit drive to self regulate the incongruence, while moving further along the symptom time line towards failed coping. The challenge for the interpersonal is to enable the complainant and the EHO to survive this trend towards polarisation of the other, in order to re build trust and rapport. The move from the base of the triangle, as shown in Figure 6, indicates how the change towards a protocol reflective of negotiation, enables the EHO to work from the 'available' tacit experiences towards possible causal properties in the problem environment.

Rather than prescribing which information is key to the assessment, at this stage the key is the act of gathering

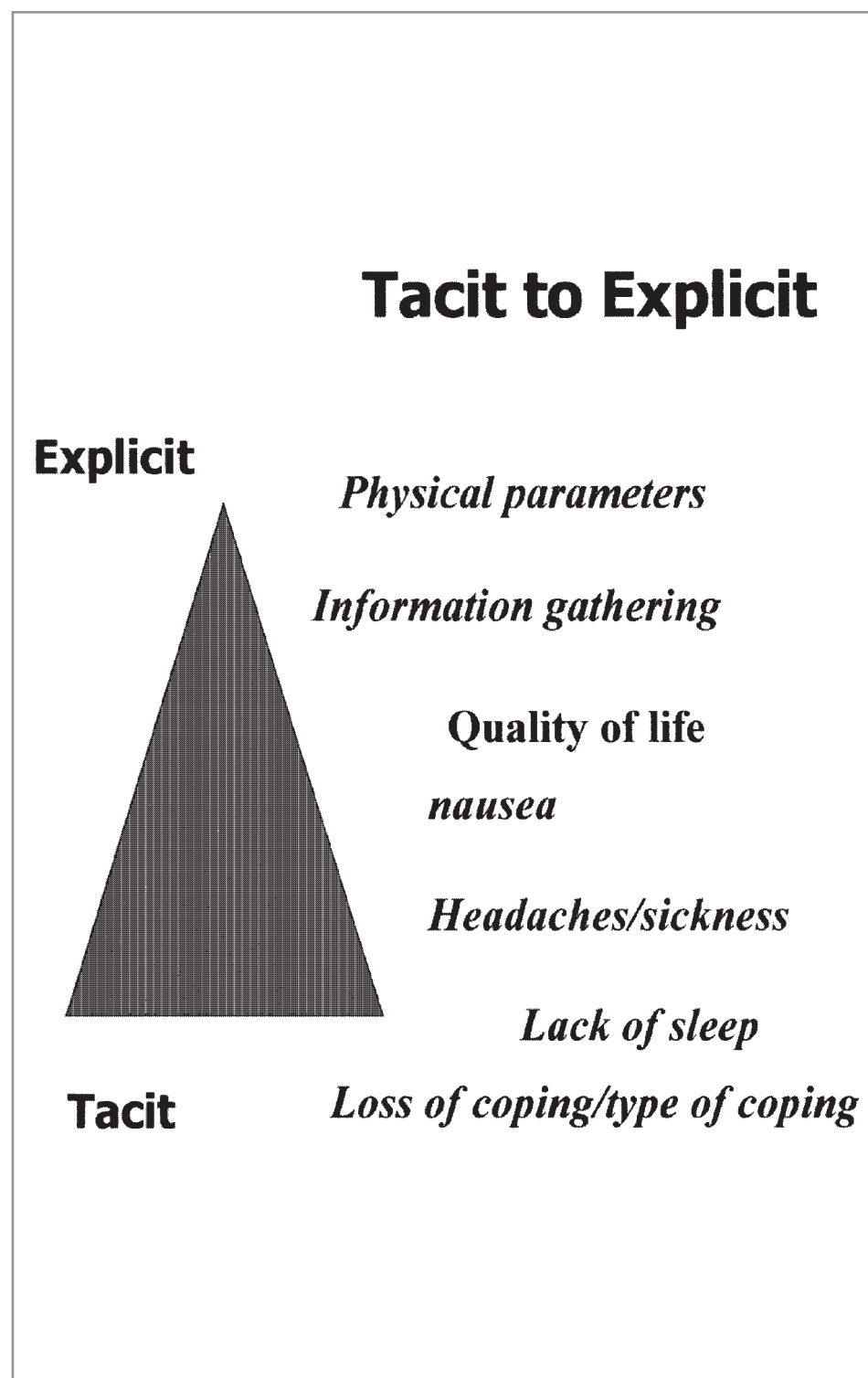


Figure 6 Title: Tacit to explicit, a way to work with subjective experience

information from the complainant. This activity is likely to prepare the interpersonal for problem solving and co-operative behaviour.

## 5. CONCLUSION

The behavioural context associated with

LFN exposure in the environment offers a rich source of secondary information and may provide routes towards enhanced practice for the EHO. The structured collection of such information would also provide a valuable source for 'common ground' between the complainant and the EHO, an important element in developing a sustainable and practical base for improved coping, reduced isolation and improved communication for the complainant.

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