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# Apports de l'ingénierie psychosociale et cognitive pour la transfusion sanguine

# Psychosocial and cognitive engineering contributions to blood transfusion

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## Introduction

The ability for blood collection establishments to answer patients' needs is a global public health stake. To answer these needs, three blood collection systems have emerged: replacement systems (donations are made by relatives of the patient who needs a transfusion, as payment), remunerated systems, and non-remunerated systems. As part of a worldwide action plan, the World Health Organization (WHO) has been preconizing for many years to deviate from the first two systems, emphasizing on the "serious threats to the health and safety of the recipients as well as the donors themselves" that they pose. The WHO's goal is to attain 100% "voluntary and non-remunerated" blood donation [1], which would be the best way to conciliate sufficiency and transfusion security. Yet, to deploy an ethical donation system implies to compensate the financial motivation in order to recruit enough donors. Without the financial gain, it is necessary to have a precise understanding of blood donation determinants (i.e. the factors that might motivate or deter the donation behavior) so that efficient strategies to recruit and retain blood donors can be deployed, and ensure sufficiency in blood products. This problematic does not apply only to blood donation but also to plasma donation, in a context of a constant increase of needs [2].

We observe a flourishing literature in human sciences trying to identify these determinants [3–6] (for a review, see Bednall & Bove, 2011) [7], to develop procedures and concrete methods to optimize recruitment and retaining of donors [6,8–10], to convince them to convert from whole-blood donation to plasma donation [11,12], to engage migrants populations [13,14], etc. Thus, while many mechanisms remain uncertain, the literature is full of studies and experiments that proved efficient. Yet, a quick observation of organizational practices raises a problematic: part of the existing knowledge is not known from blood collection establishments, and whenever it is known, they are rarely incorporated in the staff practices. The aim of this article is to offer some insights on the reasons these experiments have a hard time finding applications inside organizational contexts, by supporting a distinction between the application and the applicability of research, and arguing the relevance of psychosocial engineering for blood collection establishments.

## Theoretical and applicable research

There is in psychology as many fields of study that there are of human activity (health, work, education, training, etc.), and one of the criterion to distinguish studies is to categorize them as "fundamental" or "applied". The first could be defined as research aiming only at building

a better understanding of the world, without other goals than the development of theoretical knowledge, whereas the second would aim at solving concrete problematics by developing tools and methods.

If this distinction can appear intuitive and easy, it also generates some confusion, fundamental research often becoming in the collective mind a “laboratory research”, and applied research becoming a “field research”. In fact, whether it is laboratory or field, fundamental or applied, every research has an application potential [15]. This potential represents the degree of practical utility that the research has. The more useful a research is to answer specific concrete problematics, the more application potential (applicability) it has. This notion of applicability enables us to highlight the fact that a study with a high applicability is not an “applied” study. It is at best a demonstration of a solution that was so far inexistent, and useful to answer the problematic. To qualify the research as “applied” requires that it be actually deployed outside of the experimental context. Applicable research are the studies that develop innovative solutions, but their application implies a change in practices, by removing obsolete ones, modifying them, or adding new ones. Only when considering this step, should a research be qualified as “applied”.

For instance, Masser, Bove, White, & Bagot (2016) [12] published a study in which they compared intention to donate plasma among a group of first-time plasma donors and a group of whole-blood donors. They crossed intention to donate plasma with data regarding vasovagal reactions and showed that among donors who had had a vasovagal reaction during their last donation, intention to donate plasma was diminished among plasma donors, but not among whole-blood donors. In a context where donors who have a vasovagal reaction often disappear from the donor panel, it seems that offering them to change their type of donation is an innovative idea to increase their return rate. The applicability of this research seems high since it is easy to imagine applications enabling staff to integrate this knowledge into their practice, for example by calling back donors a few days after their donation to convert them to another donation. It would prevent donors not coming back for months, sometime years. To our knowledge, this practice is not the norm, donors who had a vasovagal reaction often being called back for a same donation a few months later.

Among the reasons that would explain that the knowledge produced by a study is not deployed on the field, three seem to emerge. First, part of the responsibility falls on the researchers team, who needs to communicate on the applicability of their work, both inside the scientific sphere but also outside, to professionals that could beneficiate from this

knowledge. The stake is to make scientific research accessible. The second factor explaining the lack of translation of knowledge into practices is the fact that some solutions tested experimentally are not realistic for the organizations who would need them, regarding the organizational context in which the solutions would be deployed. In other words, some solutions are efficient experimentally, but are unrealistic and will most likely never be applied. Finally, the third factor is the difficulty to understand the need for change in the practices, and to accompany this change. Even when the solution seems simple, it is crucial to keep in mind that if it is innovative, it will require a change. It is then necessary for managers and researchers to question the potential barriers to change that they might encounter trying to apply the solution. When interacting with researchers and professionals of the blood transfusion, this problematic often comes out.

## Psychosocial and cognitive engineering

Psychologists' work is to mobilize the fundamental knowledge from the literature and, as an engineer would, to use this knowledge to conceptualize applications that solve field problematics. To avoid the problems previously mentioned, the psychosocial and cognitive engineering process requires a precise analysis and understanding of socials contexts, in order to clearly identify the field's problematics, evaluate the efficiency of the existing practices, and underline the weaknesses of the procedures. It also requires to master recent scientific data from the literature, and to link them with the problematics identified to conceptualize potential solutions. The alternatives must be evaluated experimentally to verify their efficiency, but it is also necessary to evaluate the potential barriers to change that could emerge before spreading the new practices in the whole establishment. The first steps of psychosocial engineering exist in the literature, but the lack of recommendations regarding the analysis of potential barriers for members of staff and how to accompany organizational change in blood collection establishments is an obstacle for the translation of knowledge into practices.

Thus, when a solution aiming to be "applied" is proposed, some questions should be asked to ensure that the professionals will be able to integrate the information, understand the necessity to change their practice, and to accompany the questioning of their current practice often based on personal experience. Will the solution redefine the meaning of the staff's activity? Will it conflict with the staff's values and norms? Will it impact the staff's other activities? Will it require the staff to develop new skills? Etc. All the potential consequences of the

solution should be examined.

These questions must guide actions of establishments willing to change their staff's practices in order to attain the goal they set.

It would seem that the best way to develop relevant knowledge for blood transfusion establishments' practices is for researchers and organizations to collaborate. The aim is to confront researchers' hypotheses with the staff's experience to develop strategies that will meet their daily problematics, so they realize the need to change.

One of the best examples of the psychosocial engineering in transfusion related articles is the paper of Charbonneau & Daigneault [13]. In this publication the authors related five years of studies and initiatives conducted with Héma-Québec (*i.e.* a blood collection organization in Québec) aiming at increasing the panel of blood donors from ethnic/religious communities, detailing the four step of the psychosocial engineering.

1) There was a clear identification of the problematic and its implications for blood collection establishments, the practices in other countries, the socio-demographics characteristics of the communities targeted, the study of their motivations and barriers to blood donation. 2) Solutions were tested, and employees consulted so that their barriers to change could emerge. 3) A training program tailored to eliminate those barriers was deployed, and alternatives were suggested to employees. 4) Finally, the relevance of the training program and the alternatives was evaluated, and the new solutions' efficacy could be observed by looking at the evolution of interactions between ethnic/religious communities and the organization.

Therefore this article, instead of presenting an experimentation and its results, presents an entire process that not only includes the outcomes of qualitative and quantitative studies, but also data that is necessary to understand the organizational obstacles that may emerge for any blood collection establishments who would want to answer the same problematic. It is to this day, and to our knowledge, the only article to give such accurate feedback on the organizational challenges of applied research in blood donation behavior.

## Conclusion

To prove that an altruism-based blood donation system can concur a remunerated system in a context of increasing needs for blood products, it is necessary to turn towards human sciences. Beyond experimentations, it is crucial that researchers and managers realize that the goals cannot be achieved without a strong engagement to translate knowledge from the scientific literature into organizational practices and to accompany organizational change. This includes

not only an evaluation of the efficacy of new strategies but also a measure of employees' barriers to change. In the blood transfusion field, numerous problematics could beneficiate from this approach, such as the field of studies currently trying to develop ways to increase the plasma donor panel, in a context of constantly increasing needs for plasma derived-product.

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