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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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1 Introduction

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

17 We observe a flourishing literature in human sciences trying to identify these determinants
18 [3–6] (for a review, see Bednall & Bove, 2011) [7], to develop procedures and concrete
19 methods to optimize recruitment and retaining of donors [6,8–10], to convince them to
20 convert from whole-blood donation to plasma donation [11,12], to engage migrants
21 populations [13,14], etc. Thus, while many mechanisms remain uncertain, the literature is full
22 of studies and experiments that proved efficient. Yet, a quick observation of organizational
23 practices raises a problematic: part of the existing knowledge is not known from blood
24 collection establishments, and whenever it is known, they are rarely incorporated in the staff
25 practices. The aim of this article is to offer some insights on the reasons these experiments
26 have a hard time finding applications inside organizational contexts, by supporting a
27 distinction between the application and the applicability of research, and arguing the
28 relevance of psychosocial engineering for blood collection establishments.

29 Theoretical and applicable research

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

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

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

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

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

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

77

78 [Psychosocial and cognitive engineering](#)

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

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

99 solution should be examined.

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

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

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

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

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

125

126 Conclusion

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

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

137

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