



Feeling of knowing and over-claiming in students from secondary school to university



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ABSTRACT

The feeling of knowing (FOK) is a component of meta-memory that helps people decide if they know or do not know a specific piece of information. By using over-claiming technique as a convenient method for measuring FOK, this study aims to analyse if it varies systematically across different academic levels. It is worth to analyse this issue because FOK may be influenced by the different curricular content learned in each course. Results show that FOK of compulsory secondary school students (aged 15–16, $n = 506$) is significantly lower than that of students of upper secondary education (aged 16 to 17, $n = 469$), which in turn, is also significantly lower than that of the undergraduates (aged 18 and more, $n = 968$). Also, the research has found that FOK is significantly different depending on the specialization of the students in university. Finally, over claiming technique is shown to be a new and simple way to evaluate FOK, a construct that can contribute to a better understanding of individual differences in academic learning.

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1. Introduction

1.1. Feeling of knowing

The feeling of knowing (FOK) is a meta-cognitive impression or awareness that refers to people's confidence on their ability to recall knowledge about a given item of information (Hanczakowski, Zawadzka, & Cockcroft-McKay, 2014). In more plain words, FOK can also be described as the signals that indicate whether a certain piece of information is available in the memory store, and if it is worth searching for it (Koriat & Goldsmith, 1996).

More concretely, the present article conceptualizes FOK as what Koriat (2000) calls the subjective monitoring of knowledge, which includes both automatic and conscious parts of the meta-memory. In their own words: "The subjective monitoring of knowledge, that is, knowing about knowing, appears to constitute one of the defining properties of consciousness, because consciousness would seem to imply not only that I know something, but also that I know that I know it" (p. 150). According to this author, FOK involves the intuitive everyday feeling of knowing something, although sometimes one might not be able to retrieve it to the conscious memory, and it also comprises the intentional process of recalling certain items of information, which means being able to place it in the conscious space and reproduce it.

After these definitions, it is obvious that FOK is tightly connected to the teaching and learning process in school because, to learn, we need to connect the new information to the knowledge we already have, and this process means, inevitably, recovering information from the memory. In this context, FOK may refer, among other issues, to the curricular contents stored in the memory, to the judgements and feelings developed because of learning this content, and also to the motivational processes that drive action during the whole process (Koriat, 2000). As the curricular content varies and increases through successive academic levels, it can be expected that the FOK may vary accordingly.

Moreover, experts on learning and individual differences will probably find relevant the FOK's research, as it has implications on how people learn and on how they judge the results of their learning. For instance, some authors have found that FOK is based on study effort (Koriat, Nussinson, and Ackerman, 2014) and also that it is inversely related to the amount of time invested in learning (Koriat and Ackerman, 2010).

Thus, the purpose of the present report is to provide a simple way to find out about the students' FOK, from secondary school to university, and to describe the differences between courses in these educational levels.

1.2. Characteristics of FOK

There are some issues about FOK that should be taken into account when carrying out research on this construct. First of all, when people are asked about the knowledge they have of a certain piece of information, this knowledge may be more or less retrievable depending on

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partial information concerning its nature, such as its semantic or phonological similarity with other contents, which can work as a priming cue for unveiling its meaning (Hanczakowski et al., 2014). Indeed, when the cue is substantial and evokes a sufficient degree of familiarity, a purposeful search for the meaning of the item is engaged, making the FOK precision raise significantly (Koriat & Levy-Sador, 2001; Sacher, Isingrini, & Tacconat, 2013).

Also, according to Thomas, Bulevich, and Dubois (2012), there is a larger increment in the FOK judgement magnitude and later recognition of the target when, beside the label, meaningful information about the item is provided. Equally, contextual information can be significant, as when people have feedback about the correctness of their answers, their FOK judgements and their accuracy also increase (Thomas, Bulevich, & Dubois, 2011). These findings show that meta-knowledge does not automatically change as real knowledge does, since it may not be updated, or the real knowledge that was expected to be connected to the meta-knowledge label may have vanished. For instance, some people may identify “logarithm” as a meta-knowledge label, but may also be unable to retrieve any further information about the concept.

There is an intense debate about whether age can influence FOK. Some authors (Sacher et al., 2013; Souchay & Isingrini, 2012) have shown that older healthy adults have greater difficulty than young people when recalling information and recognizing target words. They also state that the magnitude of the FOK judgements in young people is higher than that of the elder because the latter have negative beliefs and theories about their memory abilities, underestimating their ability to learn new materials and to recall already learned information. However, other experts have recently written against aging effects as they have found that, although there are age differences in episodic FOKs, differences disappear when FOK is related to semantic contents (Eakin, Hertzog, & Harris, 2014).

In contrast, some accurate studies about the developmental traits of FOK, carried out with children from 3 to 10 years of age, show that no development-related trends in the accuracy of FOK judgements can be found (Butterfield, Nelson, & Peck, 1988; Locki & Schneider, 2010).

Besides, FOK has already generated a wide amount of findings showing the good influence this feeling has on academic achievement (Winne & Nesbit, 2010), and the important role it plays in predicting performance in school (De Carvalho Filho & Yuzawa, 2001). However, only a few works focussed on the differences that can be observed in the FOK of students from different academic levels, can currently be found in the psychological literature. Among them, Locki and Schneider (2010) indicate that as the complexity of curricular school content increases in secondary education, a steady improvement in meta-cognitive abilities through adolescence has to be reported.

Thus, it is a central concern of our approach to find out whether this amplification of academic contents yields to differences in FOK in different levels of secondary school, and in different university specialities as well. If this were the case, the differences in FOK could be attributed, at least partly, to the amount of times, and the depth, a given curricular content has been studied in school. This approach stresses the effect of instruction, rather than the mere effects of aging. However, academic level is undistinguishable from age, since they usually have a parallel increase; although this is true in a general sense, specialities in upper secondary education and university undergraduates provide an appropriate platform to test this point.

1.3. Measurement of FOK

Meta-knowledge and meta-memory not only include labels of and pointers to the real knowledge structures, they also contain an estimation of the completeness of them. Therefore, FOK can be evaluated both in binary terms -i.e. knowing something or not-, or in intensity terms, that is, estimating the completeness of a given knowledge, where zero would indicate that no knowledge exists and a convenient upper value would point to the existence of an adequate knowledge.

However, in strict epistemological terms, the completeness of a knowledge structure is something difficult to establish. For the majority of people, it refers to the comparison of their own knowledge with instructed knowledge or, alternatively, with the knowledge extracted from authorised sources, like manuals, dictionaries or encyclopaedias. Instead, psychologists often apply a specific task, which involves measuring FOK by asking the participants to identify, from a list of contents, which ones they should revise or study again, in order to achieve a better understanding and recall of its meaning.

It is thus possible to presume that self-report instruments aimed at measuring academic knowledge, are actually collecting the respondents' FOK about the items in the survey. But these kinds of questionnaires often incorporate an important bias connected to social desirability, that is, the respondents' intention to show themselves as being better than the rating they would obtain from a reliable criterion, such as intelligence tests scores or academic grades (Funder, 1995; Poropat, 2014; Roczniowska & Kolańczyk, 2014).

Nevertheless, the process behind the social desirability response bias when answering FOK questionnaires has not yet been tackled. Many articles have been written about the control of the social desirability tendency when answering personality questionnaires (e.g. Rogers & Biesanz, 2015, to cite a very recent one), but up to this date, no information aimed at controlling this bias in self-report questionnaires measuring FOK and academic knowledge can be found.

This is true except for the work by Paulhus and his team (Paulhus, Harms, Bruce, & Lysy, 2003; Paulhus & Harms, 2004), which is not exactly related to social desirability but to another construct developed by these same authors. They complain about the time and resources researchers and counsellors devote at identifying social desirability bias in personality questionnaires (as they have to ask the same questions twice or must compare the answers with reliable criterions). So, to avoid these inconveniences, they present a measure of self enhancement called “over-claiming” –also written ‘overclaiming’-, meaning “...the tendency to claim knowledge about non-existent items” (Paulhus et al., 2003, p. 891) and aimed at identifying the inclination of some people to exaggerate their positive features when describing themselves. From our point of view, this “over-claiming” concept can be understood as being very close to the “social desirability” one.

The over-claiming technique is applied both to assess cognitive ability, via self-report questions, and to unveil the propensity to over-claim. Hence, respondents are administered with a set of items combining true academic concepts, like “asteroid” or “atomic number”, with foils –20% of the items-, that is, words or concepts that do not actually exist and have been created or fabricated to be plausible members of the real items, as for example “ultra-lipid” or “plates of parallax”. Subjects are asked to rate their familiarity with the targets, without being warned that some of them are false.

Several authors have demonstrated that the over-claiming technique can be reliably used to estimate the individual's cognitive ability together with their response style, under the assumption that a person's level of knowledge can be measured by the proportion of valid familiarity claim relative to the percentage of over-claiming (Hülür, Wilhelm, & Schipolowski, 2011; Pesta & Poznanski, 2009). In Paulhus and Harms (2004) terms, this proportion is called “accuracy” and, as said, it is a good estimation of the respondents' level of knowledge.

To conclude, the over-claiming technique can be conceptualized as being close to the social desirability measures, and it is quick and simple to apply. As we aim at using a fake detecting system when measuring FOK, we think that, though being somewhat old, this technique is appropriate to be applied to measure both FOK and the tendency to enhance the responses when answering a knowledge questionnaire.

1.4. Aims of the study

According to the presented background, FOK can be equivalent to the “accuracy” in the over-claiming technique, that is, to the responses

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