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Letter to Editor

What are the main criteria of science? Unconventional methods in ethnopharmacology

1. Introduction

Scientific discussion is always useful, and especially if it is respectful, meant to advance knowledge and intellectual exchange, and also to clarify misunderstandings that may appear from the use of non-conventional methods or trans-disciplinary approaches. Hence, I am grateful to Marco Leonti for expressing his opinion (Leonti, 2014) on two recent articles (Sõukand and Kalle, 2013; Sõukand et al., 2013) I have co-authored. With this commentary I will discuss the methodological questions he raises.

Electronic and written questionnaires, without accompanied plant specimens, are unconventional data gathering methods for modern ethnopharmacology, mostly oriented toward drug discovery. Pros and cons of the use of questionnaires have been briefly discussed in Edwards et al. (2005), although shortcomings are possible even when herbarium specimens are collected (for details see Łuczaj, 2010) or face-to-face interviews are performed (e.g., see Shankman, 2013) due to misinterpretation, unintentional errors or intentional fraud. However, research methodological frameworks do always have to be able to respond to specific, unique research questions and they cannot be considered as standardized sets, to be repeated in the same manner in every study. Within the diversity of possible inter- and trans-disciplinary methodologies to be used in ethnopharmacology, written questionnaires may provide important information, and in certain cultural settings, may even allow for reasonable identification of the species, preceding fieldwork with collection of voucher specimens.

I agree that the methods of data collecting used in Sõukand and Kalle (2013) set specific limits to the data obtained. The premise of the article was to examine the position of a particular group of plants within specific cultural and temporal settings – in this case, through the lens of childhood. Data used for this article was collected within a larger campaign aimed at the documentation of the use of wild food plants in the respondents' childhood. A condensed overview of the collection methodology is provided by Kalle and Sõukand (2013a), which includes a detailed report of the data collected from 250 respondents. Moreover, all names of the respondents as well as an estimated percent of the responses from different environments where the questionnaire was distributed are published in Estonian (Kalle and Sõukand, 2013b). Still, a few clarifying details may help readers to evaluate the efficiency of the methods chosen.

2. Respondent-managed written questionnaires

Estonia, like many other European countries, has a long national tradition in the use of questionnaires. This began in the 1880s and covered a broad range of subjects, ranging from those concerning songs, stories and material culture, but also concerning the use of plants for various purposes, including medicine. This topic is discussed at length in our previous work (Kalle and Sõukand, 2011a). The greatest obstacle for the use of such responses was, and still is, variations in the questions asked over the decades, but the data is still valuable and worth analysing. Indeed, some of it has already been analysed in our previous work (Sõukand and Kalle, 2011, 2012a). This approach to data collection certainly leaves quite an amount of responsibility on the respondent with regards to the accuracy of the information provided. For example, variables may include how respondents: define of the scope of the survey; identify the plant or describe its habitat; and differentiate the present from childhood. Here, much also depends on the phrasing of the questions and how the tasks are explained, but also on the possibilities for follow-up questions (e.g., retaining the contact with the respondent).

Plant knowledge is not something obvious. The practice of plant use requires proficiency in both nature and culture. In other words, traditional ecological knowledge concerning plant use is something that develops from experience with the plant, and not from merely reading about its applications and use. Considering the format of the survey in question, a greater deficiency to consider would be the exclusion of some plants that were left out of the responses due to a lack of additional cues, as would be the case in face-to-face interviews. However, the face-to-face format has its limitations as well, as time limitations and other factors may create a situation in which the uses of certain plants are not in the forefront of the respondent's “mental herbal” (Kołodziejska-Degórska, 2012), and are thus not reported. This paradigm was clearly proven by the number of plants added (mostly voluntarily) following feedback provided on the response by quite a large proportion of the respondents.

One obvious aspect of this approach to data collection is that the terminology used in the questionnaire conditioned specific responses. Nevertheless, this is a common aspect of many methods, however discipline-centred those are, “average” is almost impossible to picture. If we would have asked for medicinal plants, or did it in face-to-face fieldwork, a different set of people would have answered and the results would be different. Estonia has high rate of internet use: in 2011, 76,5% of the population aged 16–74 (according to Eurostat) used Internet for work, everyday personal and official communication (including with the state, banks, legal authorities, even elections), obtaining news and variety of the information.

However, electronic questionnaire-based research can only be useful in quite specific cultural and temporal settings, to answer specific questions. I want to stress that I am not proposing that

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questionnaire-based research can or should in any way serve as a substitute for primary ethnobotanical methodology (including face-to face in-depth ethnography-based interviews and voucher specimen collection).

3. Reliability of memory

One of the main concerns of Leonti (2014) was: if the ability of the informants to distinguish recent knowledge acquisition from the one originating from the childhood is reliable enough. The "childhood" ends with the end of school, followed by leaving home (and often the countryside), so this is quite a memorable change of life-stage. There can certainly be no final guarantee given, as human memory can err, even if we truly believe we remember certain events (Loftus, 1992). However, this is the best available data concerning this given period in Estonia and special care was taken to insure that answers were as precise as possible. Comprehensive timescales were provided by the respondents, meaning that it was clearly differentiated when some plants were used in childhood (or beyond) and some only in specific years of their adulthood (see Fig. 1 for details asked in the questionnaire). The majority of respondents also included information on who collected, prepared and used every specific plant (part).

The respondents were specifically asked to name the plants that they encountered in their childhood, meaning that they had personal experience with the plant use, even if this was just an observation of grandma's use of a specific medicinal decoction. Hence, even if some of the information is derived from books (and in such cases this is clearly differentiated in the answers, but occurred very rarely related to the plants used for making recreational teas), it was still used (e.g., practically experienced) in at least one household. The conceptual framework of our collection strategy was not the "spontaneous retrieval of informants' memories" (Leonti, 2014), but an extensive and detailed list of wild edible plants that were encountered by the informant at some time in his or her childhood (until age 18). Hence, the memory of respondents was "refreshed", by the links to two of our popular articles written on this subject in Estonian (Kalle and Sõukand, 2011b,c).

However, such a "refreshing aid" should not be considered as a threat against honest response. The majority of the people who answered the call were those who feel a responsibility towards their cultural heritage. Indeed, this sense of interest in the preservation of traditional knowledge was reflected in their survey responses. The respondents that participated in the study clearly belong to the cultural elite of the nation, and in this respect, 250 is already more than 0.025% of the speakers of the language, estimated to be less than 0.9 million according to the last population census. Given the background of the survey and the people, it is quite unlikely that they would feel motivated to cheat with the answers nor try to "seem better" (e.g., show greater knowledge than their memory allows), as there was no reward or incentive for a perceived "better-ness". This is in direct contrast with issues that arise with in-person interviews with individuals small groups, as participants in this context can experience social incentives to either hide or exaggerate their knowledge of the topic at hand, leading to social desirability bias in the dataset. However, recent research findings suggest that "web-based free-list elicitation may be less susceptible to social desirability effects than are traditional face to face interviews" (Gravlee et al., 2013).

Leonti (2014) is also concerned with the uncertainty that some information was not experienced by the respondents themselves. This really applies only to the specific medicinal plants used to treat conditions more common in adulthood, but in the majority of cases, children tasted the medicinal teas their (grand)parents made for themselves. For example, one respondent described the taste of the tea made of *Arctostaphylos uva-ursi* (L.) Spreng. (bearberry) as "the most disgusting taste experience" she had ever had. The inclusion of pertinent demographic details on respondents can be important to readers, as this can be useful in conveying the depth of the knowledge under review (i.e., TEK stemming from intergenerational experience, relation to livelihood, and exposure to nature). This aspect is clearly stated as one limitation of the study in the article under discussion (Sõukand and Kalle, 2013).

Given the voluntary nature of the survey, only those who were really interested in plants and their use (and thus are more

EATING WILD PLANTS IN CHILDHOOD 2011

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We are conducting a research project about wild plants eaten during childhood, with the aim of comparing the results with similar studies conducted abroad. We've adapted the questionnaire made by Łukasz Łuczaj in 2010.

Please list the wild plants that you ate in your childhood and answer the additional questions. In case of space shortage, please use the additional sheet.

Your name and education **(speciality), birth year:**
Where did you spend your childhood (*town, village*, and region):
Where did you mostly eat wild plants:

Please name and describe all plants that you have eaten or tasted during your childhood (until 18 years old).

Name (bracketed *name used in childhood*)	*Latin name* (if you know it)	Short description of the plant and its habitat	*Eaten part(s)*	Was the food made (what kind) or was it just tasted?	*Who collected it*? Who ate it?	*When was the plant eaten* (e.g. 80's)	Do you still eat the plant and how?

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General questions:
1. What did you consider to be a "wild plant" in your childhood?
2. What was your attitude towards eating wild plants in your childhood?
3. How were plants selected for eating?

Fig. 1. English translation of the questionnaire, which was administered in Estonian. Red-color text indicates questions used by Łuczaj and Kujawska (2012), black is original version used. Questionnaires were distributed by mail and through the Internet, and were accompanied by a detailed description of the study aims and links to our relevant earlier publications. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)