Uncovering social workers' knowledge use: A study of the tacit-explicit dimension of social workers' professional judgements

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Abstract: The aim of this study was to explore whether social workers can become more explicit about their knowledge use if they are assisted in analyzing the rationales underlying their conclusions about diagnosis and treatment. By dissecting the rationales provided by 46 Swedish social work practitioners and students in response to two case vignettes describing vulnerable children and their families, and by systematically comparing the rationales generated by two methods of data collection, the study arrived at mixed results. At the general level, the analyses showed that the social workers were indeed more explicit about their knowledge use when assisted in analyzing their rationales. However, there was substantial variation across different types of argument components. While a majority of the respondents spontaneously provided basic level arguments, prompts were often required for them to make explicit the level of uncertainty associated with a conclusion, and to elicit information about specific knowledge sources. Further, most social workers failed to provide a more general explanation for why they inferred a specific conclusion from the data, even when queried. Finally, the results indicated that the knowledge underlying conclusions about treatment was more prevalent and/or explicit in social workers' reasoning than the knowledge used for arriving at conclusions about diagnosis.

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Introduction

The use of knowledge to solve practical problems constitutes the very heart of professional practice (Abbott, 1988; Rosen, 1994). For decades, substantial energy has been invested in endeavours to conceptualize, empirically explore, analyze and critically assess professional knowledge and knowledge use, not least in social work. In addition to the vast literature debating and empirically studying the implementation of evidence-based practice ([EBP], for example Gambrill, 2018), these studies include inter alia theoretical articles focused on conceptualizing and categorizing forms and sources of social work knowledge (e.g. Trevithick, 2008), survey studies exploring practitioners' rankings of the usefulness of different knowledge sources (e.g. Chateauneuf et al., 2016), empirical studies employing a range of research methods to identify both the substantive knowledge and the knowledge sources used in actual practice (e.g. McCafferty, 2020; Osmond and O'Connor, 2006; Rosen et al., 1995), and texts calling for a more complex understanding (than EBP) of knowledge use in social work practice (e.g. Gredig and Sommerfeld, 2008; Heinsch et al., 2016).

Among scholars occupied with analyzing the use of knowledge and expertise in professional practice, it is generally recognized that such knowledge use entails a tacit dimension (e.g. Eraut, 2000; Molander, 1992; Osmond, 2006; Cianciolo and Sternberg, 2018). In the social work literature, it has frequently been suggested that social workers find it difficult to be explicit about what they are doing (e.g. Munro, 1998). However, over recent decades, in the wake of the growth of the evidence-based practice movement, the critical aspects associated with relying too mechanically or uncritically on tacit knowledge in professional practice have increasingly been highlighted. These critical aspects include, for example, the fact that intuitive thinking (tacit knowledge use) often involves cognitive shortcuts, such as for example stereotyping, confirmation bias and availability bias, which may potentially lead to systematic bias in conclusions (e.g. Kahneman, 2011). In addition, the failure to articulate the knowledge used in practice may effectively obstruct not only the internal and external assessment of the reliability, validity and relevance of this knowledge, but also the possibility of truly shared decision-making with clients and other stakeholders, as well as the collective development and distribution of practice-relevant knowledge (e.g. Osmond, 2006; Munro, 2020). Furthermore, from the perspective of professional ethics, it may be argued that practitioners who exercise discretionary powers in their work with individuals have a moral obligation to be able to justify the knowledge that informs the professional judgements and actions affecting these individuals, and how it does so (Molander, 2016). Finally, there are numerous practice settings in which social workers are expected to being able to articulate their reasoning, such as for example supervision, case discussions and court rooms.

Guided by the aim of producing more transparency and accountability in

knowledge-informed practice in social work, several assessment tools have recently been developed. In Sweden, these include 'Barns behov i centrum' ['Children's needs in focus'; BBIC] (National Board of Health and Welfare [NBHW], 2018), which is widely used. Simultaneously, researchers have begun exploring the possibility of using research methods and reflective tools to capture (and thereby making explicit) the tacit knowledge used by social workers in their practice (for an overview, see Osmond and Darlington, 2005).

Against this background, this study aims to explore whether social workers can become more explicit in their knowledge use if they are assisted in analyzing the rationales underlying their professional conclusions. The study is based on a systematic comparison between two sets of data collected from 35 social work practitioners and 11 social work students in Sweden by means of 1) a case vignette discussed in the context of a think-aloud interview (also referred to as protocol analysis, e.g. Ericsson, 2018) and, 2) a case vignette accompanied by detailed questions dissecting the rationales supporting the respondents' conclusions about 'diagnosis' and 'treatment' (e.g. Benbenishty et al., 2003). The concepts 'diagnosis' and 'treatment' do not belong to the everyday terminology of social work, but are used here as metaphors for the common tasks of identifying/defining and solving practical problems (cf. Abbott, 1988). While the think-aloud interview involved very few prompts from the interviewer (an unstructured request), the collection of the second set of data was based on prompts specifically designed to help the respondents make explicit their rationales (a structured request). Thus, if being given assistance in dissecting the rationales underlying conclusions about diagnosis and treatment does lead to a more explicit use of knowledge, we would expect the data generated by the structured request to include more complex arguments than the data generated by the unstructured request. The British philosopher Stephen Toulmin's (1958/2003) model of the argument has been employed both in the set-up of the research design and to categorize the components of knowledge used in the respondents' rationales. By operationalizing knowledge use as the structures and contents of professional judgements and rationales, this study is aligned with the research tradition instigated by Rosen and colleagues (Rosen, 1994; Rosen et al., 1995) and Benbenishty and colleagues (Benbenishty et al., 2003; Osmo and Benbenishty, 2004), which peaked around two decades ago, while at the same time responding to the increasingly powerful calls for more empirical and practice-relevant research about knowledge use in social work (e.g. Kreisberg and Marsh, 2016).

A basic premise of this study is that (some types of) tacit knowledge can indeed be elicited and expressed in words. This is by no means an undisputed assumption (e.g. Turner, 2012). While some of the disagreement on this issue may be attributable to different epistemological standpoints (cf. Gulick, 2016), some of it is undoubtedly due to a continuing lack of conceptual clarity in expressions such as 'the tacit dimension' and 'tacit knowledge' (Gulick, 2016; Osmond, 2006). Around ten years ago, the sociologist Harry Collins (2010) made a conceptual contribution to this

discussion by distinguishing between three types of tacit knowledge, which vary in their resistance to explication. This distinction is very practical, since it allows scholars engaged in the empirical study of the tacit-explicit dimension of knowledge use to be explicit about what type(s) of tacit knowledge they are examining. By giving a detailed description of Collins' (2010) classification of tacit knowledge in the background section of this paper, and discussing it in the context of knowledge use in social work practice, this study not only clarifies one of its most central concepts, but also introduces Collins' (2010) work to the field of social work.

The empirical context of the study involves social work with vulnerable children and their families. The reason for choosing the field of child welfare for this particular study is that the circumstances of working with children and their families – which include 'limited knowledge, uncertainty, high emotions, time pressures and conflicting values' (Munro 2020, p. 2) – pose major challenges to practitioners' reasoning skills. That said, this study's methodological strategy for analyzing (tacit) knowledge use in practitioners' rationales could fruitfully be used in relation to data from other fields of social work, as well as data from other professions whose work involves assessing the needs of clients.

Making tacit knowledge explicit: A background

In 1966, Michael Polanyi introduced the concept the *tacit dimension*, expressed by the notion that 'we can know more than we can tell' (Polanyi, 1966, p. 4). Now, decades later, at a time when the concept has long been well-established in the social sciences and humanities, the actual meaning of the term is still being discussed (Gulick, 2016). In social work, it has been argued that the habit of discussing tacit knowledge 'under the guise of practice wisdom' (Osmond, 2006, p. 162) – a concept employed to describe all and sundry aspects of social work practice – has effectively restricted our capacity to clearly conceptualize and identify the tacit dimension of social work knowledge. In the more general literature, there are primarily two contested aspects of the conception: first, does the tacit dimension of knowledge denote tacit knowledge as a product or the process of tacitly knowing, or both (cf. Pozzalli, 2008)? Secondly, is tacit knowing/knowledge something that is difficult to articulate or something that is impossible to articulate (e.g. Collins, 2010)?

Employing Harry Collins' conceptual framework to understand the nature and strength of tacit knowledge in professional practice

In fairly recent theoretical work intended to bring some order to the terrain of tacit knowledge, Harry Collins (2010) has taken a stance on both of the above-

mentioned contested issues. While choosing to treat the tacit dimension of knowledge as a product, he has classified this knowledge into three categories, based on the reason why the knowledge resists explication and the force of this resistance. The three types of tacit knowledge consist of 'collective' knowledge (that which most strongly resists explication), 'somatic' knowledge (knowledge of 'medium' strength) and 'relational' (or weak) knowledge (Collins, 2010). Collective tacit knowledge corresponds to knowledge that individuals unconsciously acquire by being embedded in society, and which they need in order to act and interact appropriately and meaningfully in this society. The tacit 'strength' of this type of knowledge is primarily due to its collective and unquestioned character. Somatic knowledge involves the body (which makes it difficult to explicate) and is primarily acquired through guided instruction, demonstration and personal contact. This type of knowledge is presently tacit, but according to Collins (2010), some aspects of it could be explicated, given further developments in science and technology. Finally, relational tacit knowledge encompasses knowledge that is presently tacit, due to existing relations between people or groups of people (relations which inter alia affect how we organize tasks and pass on knowledge between individuals), but which could in principle be spelt out (Collins, 2010).

In this paper, I would like to draw attention to Collins' (2010) understanding of relational tacit knowledge, which opens up for the possibility of making some tacit knowledge explicit while simultaneously obliging us to pay attention to the social factors and processes that might potentially generate or reinforce the tacit dimension of knowledge in professional work. While the most common examples of tacit knowledge – those of facial recognition and of riding a bike (Polanyi, 1966) – primarily represent the somatic tacit knowledge category, relational knowledge in professional practice may for example include knowledge that practitioners take for granted, either because it has become so routine that it is no longer articulated, or because working in a professionally homogenous context means that wordy explications come to be regarded as superfluous (Molander, 1992). In addition, relational knowledge may include knowledge that is consciously silenced – perhaps due to an unwillingness to be scrutinized by colleagues and/or various stakeholders, or because the practitioner wants to protect or obstruct some form of knowledge (Molander, 1992). Moreover, factors related to the general culture and resources at work may hinder the articulation of the knowledge used in social work practice. For example, Munro (2008) has noted that treatment conferences tend to involve so called 'group thinking', whereby consensual (rather than critical) styles of reasoning serve to conceal (rather than reveal) the knowledge that is or could be used for coming to conclusions about clients. Finally, in working contexts characterized by limited time and limited resources, such as contemporary social work, professional deliberations about knowledge use must often – and justifiably so – give way to professional action. Against this background, it is reasonable to assume that at least part of the knowledge that is of interest to this particular study, i.e. knowledge

that guides social workers' conclusions about diagnosis and treatment, would in its tacit form be classified as relational tacit knowledge, which means that it may in principle be explicated.

Employing tools for eliciting tacit knowledge in social work practice – previous research

As noted in the introduction, researchers have begun exploring the possibility of using research methods and reflective tools for capturing – or eliciting – (part of) the tacit knowledge used by social workers in their practice. The majority of these methods or tools serve to assist social workers in recalling and articulating their knowledge use. These include for example the critical incident technique (e.g. Fook et al., 2000), case-based in-depth interviews, think-aloud interviews, reflective recall exercises, knowledge mapping, and the construction of personal narratives (for an overview, see Osmond and Darlington, 2005). However, taking into account that some tacit knowledge is strongly resistant to articulation, and/ or that there may be an incongruence between the practitioner's 'espoused theory' and his or her 'theory-in-use' (Argyris and Schön, 1974), some researchers have employed pictorial representations of knowledge use (e.g. Osmond and Darlington, 2005) or suggested the combination of direct observation and personal interviews (e.g. Bergheim, 2021). Indeed, some of the methods mentioned above are similar or identical to those employed by psychologists for eliciting and representing expertise (for an overview, see Lintern et al., 2018). The current article presents the first study on the subject of tacit and explicit knowledge use that systematically compares data generated by means of *think-aloud interviews* (a less structured approach) with data generated using *structured questions based on the Toulmin model of the argument* (a more structured approach; Toulmin, 1958/2003).

Uncovering knowledge use in practitioners' judgements and rationales: The Toulmin model of the argument

This study is occupied with the degree of explicitness in the knowledge that social workers use to arrive at conclusions about diagnosis and treatment. While knowledge is operationalized as the *contents* of practitioners' conclusions and rationales (cf. Rosen, 1994), the degree of explicitness of this knowledge is analyzed by focusing on the *structure* of knowledge use, that is the structure of social workers' arguments. The distinction between the contents and structure of knowledge (use) is crucial, as it suggests that the degree of explicitness in the knowledge articulated in an argument can be analyzed independently of *what* knowledge is being articulated (and from which knowledge source). In this study, the structure

of knowledge use is modelled by means of Stephen Toulmin's (1958/2003) model of the argument. The Toulmin model, which was originally developed for analyzing practical reasoning, and which has only rarely been used in social work research (e.g. Benbenishty et al., 2003), presents a structure with six components: 1) the conclusion, 2) the data, 3) the warrant, 4) the backing, 5) the rebuttal, and 6) the qualifier. Consistent with my earlier research on professional reasoning (e.g. Wallander and Molander, 2014, 2016), I have added a further component to the model, 7) the source of knowledge. Figure 1 presents an *example* of a complete argument about diagnosis (based on empirical data from this project).

Figure 1
An example of a complete argument about diagnosis (based on empirical data from this project, with additions and revisions).

| Data | → | Qualifier | Conclusion about diagnosis |
| Olle (4 years old) has never been to the dentist. He has the responsibility for brushing his teeth, which are yellow. | | I am quite sure… | This is a situation of child neglect. |

Identification rule
IF a 4-year-old child has never been to the dentist, and has the responsibility for brushing his/her teeth, which are yellow, THEN there is a situation of child neglect.

Rebuttal
If there is a biological reason for Olle's teeth being yellow.

Backing
Taking care of one's teeth is a basic human need, and parents who can't handle this responsibility often have major problems with the overall parental care of their child (especially considering the huge amounts of assistance afforded by health professionals).

Knowledge source
Collected knowledge from many years of working with vulnerable families. Lots of education, lectures, supervision and some life experiences.

The three most central components of the argument – which together make up a *basic level argument* – are the *conclusion* (the judgement or claim), the *data* (the initial information), and the *warrant*, which is used to legitimize the step between the data and the conclusion. The warrant takes the form of an 'if…then' statement or rule, and may for example serve to identify a problem, based on a set of characteristics (an *identification rule*), or propose a particular intervention or action, based on a perceived problem (a *treatment rule*; Toulmin, 1958/2003; Wallander and Molander, 2014, 2016). In the example introduced in Figure 1, the identification rule links data/information about the poor status of a small child's teeth (here described in a case vignette) to the conclusion that this is a situation of child neglect. The knowledge embedded in a particular warrant or rule may need to be validated or justified, especially if it is challenged. This validation is provided by the *backing,* which may consist of additional warrants or even entire arguments (Toulmin, 1958/2003). A further way of increasing the certitude of the knowledge expressed in a rule (and indeed also in a backing) is by referring its origin to a valid and reliable source of knowledge, such as scientific knowledge. In our example (Figure 1), the backing consists of a general statement about the responsibility of parents to care for their child's dental hygiene, as taking care of one's teeth is a basic human need. This backing is – according to the respondent him-/herself – grounded in knowledge collected from many sources. Further, as has repeatedly been noted in the literature (e.g. Munro, 2020), professional practice is by its very nature complex and uncertain. In the structure of the argument, this uncertainty is dealt with by introducing potential *rebuttals* (i.e. exceptions) to a rule, and by *qualifying* the rule in terms of specifying the overall strength of the rule for coming to a conclusion. In the argument presented above, the rebuttal states that if the colour of the child's teeth is not the result of poor dental care routines (as suggested in the data), but that the teeth are a bit yellowish by nature, this may not be a situation of child neglect. The social worker putting forward this argument is 'quite sure' of his/her overall conclusion.

Arguments that include one or both of the components that serve to strengthen the knowledge expressed in a rule (the backing, the source of knowledge) or one or both of the components that make explicit the degree of uncertainty of the knowledge expressed in the argument (the rebuttal, the qualifier) are referred to as *complementary level arguments* (Toulmin, 1958/2003). For an example of an argument about treatment, see Figure A1 in the Appendix.

Methods

Respondents

This study is part of a small-scale project with a multiple-method research design, that aspires both to explore a number of substantial research questions and to try out new combinations of methods for collecting data and analyzing knowledge use in social work. In view of its small-scale setup, the project does not have the ambition of straightforwardly applying its conclusions to larger populations of social workers. Therefore, the principle of geographical proximity guided the selection of respondents, and the final sample may be regarded as a convenience sample. The respondents of the study includes 35 social workers representing 13 municipalities in southern Sweden (1-6 practitioners per municipality), and 11 social work students in the closing stages of their studies (terms 6 and 7) on the Bachelor program in social work at a university in southern Sweden. The practitioner respondents, consisting of social workers who were currently working or had previously worked with investigations into the situations of vulnerable children and their families, were all recruited via the heads of the child and family units at the municipal social services. The recruitment of students took place during selected classes at their university. I was not myself an employee at this university, but was given the opportunity to briefly present the project to students in two classes, and to ask if some of them would be interested in taking part in a two and a half hours long interview. The participating students were given a 100 SEK cinema ticket as a token of appreciation for their time and effort. Prior to the data collection, all the respondents received a letter containing information about the study and about their individual rights as participants in a scientific study. Having read this information, they signed and handed in a written statement of informed consent.

All of the 35 practitioners hold a Bachelor's degree from a university, the majority in social work. In addition, eight practitioners also hold a Master's degree. Their mean work experience amounted to nine years in the field of child welfare work (median = 7) and seven years in child welfare investigative work (median = 4). While the three respondents with the longest work experience had practiced in the field for thirty years or more, only one respondent had practiced for less than one year. Of the 11 student respondents, five had taken special courses on the subject of vulnerable children and families, and four had practiced in the child welfare field as part of their student practicum, which takes place during the fifth term of the program.

Data collection

The collection of data for the project took place over the course of 18 months in

2016 and 2017 and included *inter alia* personal interviews, conducted on one occasion, with the 46 respondents (the interviews took place within a few months of recruitment). These interviews involved a think-aloud module (method without thinking prompts = an *unstructured* request) and a computerized questionnaire (method with thinking prompts = a *structured* request), and were based on the use of two comprehensive case vignettes, which were randomly allocated to be employed in the think-aloud module (which was completed first) and in the questionnaire.[1] The interviews were standardized, in the meaning that all respondents received the same instructions/questions in the same order, and that there were no follow-up questions.

The unstructured request

The think-aloud interview is a well-established method for tracing the thought processes of professionals (Ericsson, 2018) and has been used by several scholars in social work (e.g. Osmond and O'Connor, 2006). Since the subjects of such interviews are asked to 'give immediate verbal expression to their thoughts' while solving a particular problem (Ericsson, 2018, p. 193), the data are assumed to reflect the true contents and sequence of their ongoing thoughts, and to be unburdened by the problems of reactivity that are associated with analysis and retrospection (Ericsson, 2018). In this study, the think-aloud interview involved asking the respondents to read the vignette aloud and to give immediate verbal expression to their thoughts about the vignette. During this exercise, they received prompts only with regard to the two professional conclusions of interest in the study; that is they were asked to describe/define the situation/problems portrayed in the case vignette (diagnosis), and to suggest solutions to the problems defined (treatment; see the left column of Table 1). These prompts were introduced in the form of general instructions for the task, and the researcher stayed quiet during the entire think-aloud session.

The structured request

Immediately after this exercise, the interviewees responded to a computerized questionnaire based on the other case vignette. This questionnaire included prompts about the structure of knowledge use in the form of open-ended questions associated with each element of the expanded Toulmin model (see the right column of Table 1; fe.g. Benbenishty et al., 2003).

The personal interviews (including both the unstructured and the structured requests) lasted between two and three hours and were carried out by the author or by one of two trained research assistants. The training of research assistants involved a general presentation of the research project, a detailed description of the standardized interviewing procedure, and a lecture on the Toulmin model of the argument (with a focus on the meaning of the questions embedded in the computerized questionnaire). In order to ensure that the respondents would feel

at ease during the interviews, and to increase the likelihood of honest answers, we informed them that there were no right or wrong ways of assessing or reasoning about the vignettes (at least not from our point of view), and that we regarded all potential sources of knowledge as being of value in professional practice.

Table 1
Overview of instructions and questions employed for the unstructured and structured requests in the personal interview.

Unstructured request	Structured request
Exploring knowledge use in diagnosis	
We are interested in… how you perceive or 'interpret' the situation that is depicted in the vignette (i.e. your understanding/ definition of the situation/problem). How would you like to summarise the situation?	The first questions below are about how you perceive or 'interpret' the situation depicted in the vignette (i.e. your understanding/ definition of the situation/problem). 1a. What problem or problems (you may mention one or more) do you perceive in the situation depicted in the vignette? Try to summarise as much as possible in your *judgements*. 1b. What *information* in the vignette have you used as the principal basis of your judgement or judgements in 1a? 1c. *In what way does the information in the vignette*, that you have described in 1b, *lead you to the judgements you have made*, and that you have described in 1a? 1d. How would you *motivate* your reasoning in 1c? 1e. How *certain* are you about your judgement(s) (those that you have described in 1a)? 1f. Are there *any specific circumstances* (or some specific circumstance) relating to X and his/her family that might lead you to *revise/change* the judgement or judgements you have described in 1a? It might, for example, be a circumstance described in the vignette that could change, or a circumstance that has not been mentioned in the vignette. 1g. From what *source* or *sources* have you acquired the knowledge that you have used in the reasoning you have described above?
Exploring knowledge use in treatment	
We are interested in… what you think about the solution to the situation/problem (i.e. problem resolution). What needs to be done, and by whom, for the situation to change for the better?	There now follow questions on what you think about the solution to the situation/problem (i.e. problem resolution). 2a. What judgement or judgements would you make about how the problems you have described above (in 1a) would best be resolved? What needs to be done, and by whom, for the situation to change for the better? Try to summarise as much as possible in your *judgements*. Questions 2b to 2g are identical to questions 1b to 1g (see above).

The think-aloud module in the interview was recorded and transcribed. This produced a rich textual material ranging from a minimum of 1,077 words to a maximum of 14,039 words (mean = 4,158 words) for each individual respondent. The textual data generated by the computerized questionnaire, which included detailed open-ended questions dissecting the rationales underlying the respondents' conclusions, are briefer and more to the point – ranging from a minimum of 220 words to a maximum of 2,406 words (mean = 804 words) for each respondent. Both sets of data were coded using the Toulmin model of the argument (see below).

Analytical strategy: Coding the data and carrying out statistical analyses

This study employs the expanded Toulmin model (Toulmin, 1958/2003; Wallander and Molander, 2014, 2016) to determine the degree of explicitness in social workers' knowledge use. The degree of explicitness is measured by observing the *complexity* of the respondents' arguments in terms of the *number and types of components* present in the arguments. Thus, if it is the case that being given assistance in dissecting the rationales underlying conclusions about diagnosis and treatment indeed leads to a more explicit use of knowledge, we would expect the data generated by the structured request to include more complex arguments than the data generated by the unstructured request.

Accordingly, I identified and counted the *prevalence,* that is the presence or absence, of each of the argument components in the respondents' accounts, and this process was conducted separately for each respondent and for the two sets of data (for a similar analysis, see e.g. Benbenishty et al., 2003). The main reason for coding the prevalence (i.e. either 1 or 0), rather than the frequency, of each argument component is that the think-aloud data comprised much more data (i.e. potentially more arguments) from each respondent than the data generated by the questionnaire (see above). Coding the prevalence of the argument components means that even if a respondent produced several arguments of varying complexity, I coded only one of them (I chose the 'best' argument in terms of complexity/explicitness).[2] Having said this, I systematically made notes about the contents of the three most important conclusions (separately for diagnosis and treatment) for each respondent and for each data set. When it comes to two of the argument components, distinctions were made in order to show the level of identified variability regarding the degree of clarity in a specific component. The reason for not making such a distinction for all the argument components was that the respondent data associated with most components involved very little variability as far as the degree of clarity was concerned. Thus, I made a distinction between implicit and explicit identification/treatment rules, noting whether the rule was present in the material but had to be inferred by the researcher (implicit), or whether it had been explicitly formulated by the respondent (explicit). In addition,

I distinguished between general and specific knowledge sources (e.g. 'research literature' vs. references to a specific book). In order to establish the coding criteria, that is the criteria employed to determine the existence of a 'backing', for example, and to ensure that these criteria were consistently applied to both sets of data (cf. intracoder reliability), I carried out three rounds of coding. The final coding scheme, including details about the coding criteria and examples from the data, may be obtained from me (on request via e-mail).

Subsequently, descriptive statistics were employed to calculate the absolute and relative frequencies of the respondents (n=46) who used each of Toulmin's components in their arguments. In order to compare the overall explicitness of the respondents' knowledge use across the type of request, summarized index variables were computed separately for the two types of conclusions and the two types of requests. In these index variables, the components were weighted in accordance with their level of explicitness/abstraction in the overall argument: the implicit rule and the general knowledge source received 0.5 points each. The conclusion, data, explicit rule, specific knowledge source, qualifier and rebuttal received one point each. Due to the high level of abstraction/generalizability of the knowledge expressed in the backing, this component received two points. The mean values for these variables were subsequently compared across the type of request using paired samples t-tests.

Findings

In order to explore whether social workers become more explicit in their knowledge use if they are assisted in analyzing the rationales underlying their conclusions about diagnosis and treatment, the analyses included a systematic comparison of the arguments identified by means of the unstructured and the structured requests. Table 2 presents the absolute and relative frequencies of the respondents (n=46) who used each of Toulmin's components in their arguments, separately for the two requests and for the conclusions about diagnosis and treatment (for examples relating to the contents of these components, see the two full arguments in Figures 1 and A1).

If we begin by considering the components associated with the basic level argument – that is the *conclusion*, the *data* and the *identification/treatment rules* – we may first conclude that in all but a few cases, the respondents provided valid conclusions about diagnosis and treatment. As far as the data component is concerned, the variation in prevalence is not related to the type of request, but to the type of conclusion. Accordingly, the respondents were somewhat more prone to be specific about the data used for coming to conclusions about treatment, as compared with their conclusions about diagnosis. When it comes to

the identification and treatment rules, the results are mixed. Thus, while a larger number of respondents clearly explicated the identification rules employed during the unstructured request, the pattern is the opposite (although with a smaller difference) for the treatment rules. Further, the absolute frequencies associated with the implicit and explicit rules reveal a difference related to the type of conclusion. Thus, while most respondents provided either implicit or explicit rules in support of their conclusions about treatment, 9 and 15 respondents respectively provided no such rule in support of their diagnostic judgements.

Table 2
Absolute and relative frequencies of the respondents (n=46) who used each of Toulmin's components (the expanded model) in their arguments

	Diagnosis		Treatment	
	Unstructured request	Structured request	Unstructured request	Structured request
Basic level argument components				
Conclusion	46(100%)	46(100%)	46 (100%)	43 (93%)
Data	37 (80%)	33(72%)	46 (100%)	44 (96%)
Implicit rule (identification/ treatment)	4 (9%)	8(17%)	14 (30%)	5 (11%)
Explicit rule (identification/ treatment)	33 (72%)	23(50%)	32 (70%)	38 (83%)
Complementary level argument components				
Backing of rule	2 (4%)	3 (7%)	3 (7%)	1 (2%)
General knowledge source	15 (33%)	12(29%)*	10 (22%)	19(44%)*
Specific knowledge source	8 (17%)	29(71%)*	4 (9%)	24(56%)*
Qualifier	7 (15%)	40(87%)	15 (33%)	42 (91%)
Rebuttal	2 (4%)	5(11%)	15 (33%)	25 (54%)

* N = 41 (diagnosis) and 43 (treatment) due to identified misunderstandings about the meaning of 'knowledge source'.

Switching our attention to the components that serve to strengthen the rule employed for arriving at a specific conclusion – that is the *backing* and the

knowledge source – Table 2 shows that most respondents failed to explicitly back their identification and treatment rules. This means that while the majority of the respondents implicitly or explicitly showed *how* they used information in the case vignette to arrive at a conclusion about diagnosis or treatment, they did not provide a more general explanation of *why* they inferred this specific conclusion from the data, even when queried about it (the structured request). As far as the sources of knowledge are concerned, quite a few respondents mentioned such sources in their think-aloud narratives, that is during the unstructured request. However, the results also show that specific knowledge sources were far more frequent in the arguments generated by the structured approach (irrespective of the type of conclusion).

When it comes to the components employed for revealing the degree of uncertainty in an argument – that is the *rebuttal* and the *qualifier* – the results show a clear variation across the type of request. Thus, the respondents were noticeably more prone to express how certain or uncertain they felt about a specific conclusion (i.e. to qualify the conclusion) when queried about it. The pattern is similar, if weaker, for the rebuttal. Here, the variation is linked to both type of knowledge and type of request. While only a few social workers brought up exceptions to identification rules, a larger number of respondents pointed out exceptions to treatment rules, and especially so when probed about them.

In order to compare the explicitness of the respondents' knowledge use at the general level – as measured by the overall complexity of their arguments – index variables were computed separately for the two types of conclusions and the two types of requests (see above). Table 3 summarizes the descriptive statistics for these index variables.

Table 3
A description of the summarized index variables measuring the overall complexity of the respondents' arguments (n = 46)

	Diagnosis		Treatment	
	Unstructured request	Structured request	Unstructured request	Structured request
Mean	3.18	4.17	3.83	5.00
Standard deviation	(1.13)	(1.33)	(1.05)	(1.16)
Min – Max	1.00 – 5.50	1.00 – 7.00	2.50 – 7.000	1.00 – 7.50
Paired Samples *t* Test: p-value	0.00		0.00	

The results present a clear pattern, indicating that on the whole our respondents were indeed more explicit about their knowledge use when they were assisted in analyzing the rationales underlying their conclusions about diagnosis and treatment. Paired samples t-tests reveal significant differences in the arguments'

overall complexity across the types of request, both for the respondents' arguments about diagnosis (mean for unstructured request = 3.18; mean for structured request = 4.17; p-value = 0.000) and for their arguments about treatment (mean for unstructured request = 3.83; mean for structured request = 5.00; pvalue 0.000).[3] Interestingly, the minimum value for three of the four index variables is 1.00, which means that at least one respondent provided only one argument component (either a conclusion or a specific knowledge source). Finally, these results also reveal that the respondents were on the whole more explicit about the knowledge used in their arguments about treatment, as compared with their arguments about diagnosis (the comparisons are made within the respective type of request).

Discussion

The aim of this study has been to explore whether social workers can become more explicit about their knowledge use if they are assisted in analyzing the rationales underlying their professional conclusions about diagnosis and treatment. By dissecting the rationales/arguments provided by 35 social work practitioners and 11 social work students in response to two longer case vignettes (using Toulmin's (1958/2003) model of the argument), and by systematically comparing the rationales generated by a less structured approach (think-aloud interviews) with those elicited by a more structured approach (detailed questions designed to elicit the various components of the rationale), the study arrived at mixed results. Below, I will discuss a selection of the most important findings.

At the general level, the analyses showed that the social workers who participated in this study were indeed more explicit about their knowledge use when assisted in analyzing their rationales. However, there was substantial variation across types of argument components. Thus, while a majority of the respondents provided either implicit or explicit basic level arguments irrespective of whether they were prompted about the components involved in these, few respondents spontaneously made explicit the level of uncertainty (in the form of qualifiers and rebuttals) associated with their conclusions. When queried about these specific components, however, almost all respondents were able to specify how certain they were about their conclusions, and around half of them proposed circumstances that would have led them to infer another conclusion about treatment from the data. These results, which are in line with those from studies carried out two decades ago with Israeli and Canadian social workers (Benbenishty et al., 2003; Osmo and Benbenishty, 2004), suggest that the knowledge associated with specifying the level of uncertainty of arguments may well be tacit in social workers' spontaneous reasoning, but that it can be articulated in response to a query. However, if the use of such knowledge is not only tacit, but actually absent from everyday reasoning,

this might indicate that social workers are at risk of confirmation bias, i.e. searching for, interpreting and remembering information that is consistent with one's existing beliefs and ignoring information that is not (Casad, 2007). Assistance in analyzing rationales also made the social workers more explicit – as well as specific – about their sources of knowledge. It is important to note however that this argument component differs from the others in that it says nothing about the actual contents of the knowledge in a particular argument.

One important but discouraging result of this study is that most social workers failed to provide a more general explanation (i.e. a backing) for why they inferred a specific conclusion about diagnosis or treatment from the data, even when queried. This result is at odds with the findings from previous research on knowledge use and professional judgements, which show much higher frequencies of such rationales in social workers' reasoning (Rosen, 1994; Rosen et al., 1995; Benbenishty et al., 2003; Osmo and Benbenishty, 2004). However, while backings for identification and treatment rules were clearly absent in this study, almost every third respondent provided a backing related to a non-asked-for conclusion about *the degree of risk or severity* of the situation described in the case vignette (not reported above). The fairly high and identical prevalence of this type of backing across the two modes of data collection suggests that the general knowledge employed for *evaluating* the degree of risk in a situation is much more common and/or explicit in social workers' reasoning than the general knowledge employed for *describing* or for arriving at conclusions about *action* (for a discussion of functions of knowledge, see Rosen, 1994). Then again, the social workers' inclination to spontaneously reason about the degree of risk or severity may be above average in these data, since they were collected in a context in which risk assessments constitute a central part of daily practice (i.e. social work with vulnerable children; Munro, 2020).

As a final point, even though the results showed that knowledge associated with both diagnosis and treatment could be elicited by means of the structured request described in this article, they also indicated that knowledge focused on describing/defining a problem is on average less prevalent and/or explicit in social workers' reasoning. These results are at odds with those arrived at by Rosen and colleagues (Rosen, 1994, Rosen et al., 1995), which showed that judgements about interventions were those that were least supported by explicit knowledge. However, these two research projects are separated by more than 25 years, and the last decades' focus on evidence-based practice and on 'what works' in practice may well have led to a more explicit use of knowledge in judgements about treatment.

There are several limitations to this study. First, despite the fact that this study includes a nuanced discussion of different types of tacit knowledge, which vary in their degree of resistance to explication (Collins, 2010), it nonetheless presupposes that *some* tacit knowledge can be articulated. In doing so, it does not take into account the possibility that the process of articulation might actually lead to a transformation of knowledge (cf. Turner, 2012). This has been variously discussed

as 'post hoc rationalization', or as the difference between a practitioner's 'theory-in-use' and her or his 'espoused theory' (Argyris and Schön, 1974). However, since this particular study is not occupied with comparing the *contents* of more or less explicit knowledge, but is rather aimed at exploring whether social workers *can* be more explicit about their knowledge use when assisted in analyzing their rationales, post hoc rationalizations may constitute less of a threat to the validity of the results. Another limitation of the study is that it applies a very structured and delimited method of analysis to the data, and that it therefore equates knowledge with the knowledge that can be embedded in an argument. This leads to the exclusion of the kind of situated or embodied practical knowledge that might be better expressed via stories or metaphors for example (Osmond and O'Connor, 2004), by detailed accounts of exceptional cases (Klein, 1998), or by practitioners' non-verbal behaviour (Bergheim, 2021). Indeed, in the community of social work researchers and practitioners, it is not uncommon to regard such non-rational knowledge as fundamental to professional practice (while simultaneously questioning the relevance of abstract and generalizable knowledge or 'evidence'; e.g. Smith, 2020). A third limitation has to do with the fact that the study uses a fairly small convenience sample of social work practitioners and students. Even though the use of convenience samples is common in this field of research (cf. Rosen et al., 1995; Osmo and Benbenishty, 2004), future studies on this subject should seek to corroborate the findings using samples that are representative of a larger population of social work practitioners. Such studies could benefit from employing the coding criteria developed in this study. Finally, an explicit argument is not the same as a professionally convincing argument, i.e. colleagues may have opposing views as regards the validity, reliability and/or relevance of the knowledge used in support of a particular conclusion. However, explicit knowledge use is a prerequisite for such an evaluation to take place.

To conclude, the results of this study have revealed that social workers might indeed be more explicit about their knowledge use if assisted in analyzing their rationales. This is particularly true for the knowledge that is related to the degree of uncertainty of an argument. However, and as discussed above, such assistance did not generate more general explanations (cf. backings) regarding *why* a situation was identified as an example of a particular problem or *why* a certain action/intervention was assumed to be helpful in solving a particular problem. It may be the case that another method for eliciting such knowledge (such as e.g. in-depth interviews in which the interviewer actively and persistently queries the respondent about such backings) might have generated somewhat different results. However, if the results from this study are indicative of an inability to make such knowledge explicit (or of a true lack of such knowledge), there is every reason to take action. The very nature of the backings – which are made up of abstract knowledge about the contents of professional classifications and the mechanisms of treatment – makes this a particularly urgent task, since such knowledge is not only fundamental to

a profession's knowledge base and legitimacy (cf. Brante, 2011), but can also (if articulated) be easily communicated, transferred to and applied across a variety of practice settings. Endeavours aimed at making explicit the profession's use of more generalizable and abstract knowledge would most likely benefit from a flexible bottom-up strategy, whereby different actors collaborate across arenas and levels. The methods/strategies that could be employed at the level of professional practice – in collaborations involving practitioners, supervisors, educators and researchers – include not only the Toulmin model of the argument, as used in this and other studies (e.g. Osmo and Landau, 2001; Wallander and Molander, 2016), but also the modelling of decision trees (e.g. Munro, 2020) and Osmond's knowledge spectrum framework (Osmond, 2005; for an overview of techniques for knowledge elicitation, see Osmond and Darlington, 2005). These tools could also be fruitfully employed as pedagogical tools in the professional education of future social workers (for an example, see Wallander & Molander, 2016).

Notes

1. A practitioner/teacher with expertise in social work with vulnerable children was commissioned to write two longer (4-page) case vignettes for the project: Olle, 4 ½ years old and Mona, 16 years old. The vignettes, which contained all the information hypothetically collected during the course of an investigation (in accordance with the assessment instrument BBIC – 'Children's needs in focus'; NBHW, 2018), were assessed for their validity by a senior researcher with relevant expertise. As part of the questionnaire, the respondents were asked to assess the authenticity of the vignettes. All respondents agreed (fully or partly) that Olle was authentic; 44 of 46 respondents agreed (fully or partly) that Mona was authentic.
2. However, the identification of argument components was not limited to one argument. Naturally, the data, conclusion, warrant and backing all related to the same argument. However, in order to capture the actual use of rebuttals and qualifiers in the respondents' accounts, these could be associated with any of the three most important conclusions about diagnosis and treatment identified for a specific respondent. The knowledge sources generated by means of the structured request were infrequently related to a specific argument.
3. The results of nonparametric tests of significance corroborated these numbers.

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Appendix

Figure A1
An example of a complete argument about treatment (based on empirical data from this project, with additions and revisions).

Data The mother's ability to reflect is limited. She does not perceive how her behaviour is affecting Olle.	→	*Qualifier* I am very sure…	*Conclusion about treatment* I suggest the treatment "Marte Meo" (where the parent-child-interaction is video-recorded and used as the basis for discussion with the parent.)

Treatment rule
IF a parent's ability to reflect and to perceive how her behaviour affects her child is limited THEN I suggest the treatment "Marte Meo".

Rebuttal
If the parent is not motivated/determined enough to work on improving the parent-child-relationship.

Backing
The reason that Marte Meo can help is that the parent is able to watch (on the video recording of the parent-child-interaction) how much the child wants contact and how the parent does not respond to this. And then, when the parent gets the opportunity to work on responding to the child, and is able to see the interaction and the warm affections that are developing between parent and child, then s/he will come to understand what was wrong previously.

Knowledge source
Work experience