Investigating women's ways of knowing: An exploratory study in the UAE

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Introduction

Personal epistemological beliefs, one's beliefs about the nature and acquisition of knowledge, and their role in the learning process have become a focus of a growing body research in recent years. Studies show that a person's epistemological beliefs play an important role in their intellectual development as well as in learning specific subjects (Hofer, 2008).

Empirical investigation of personal epistemology has been conducted in the various branches of psychology and education. The range of labels to describe personal epistemology include epistemological beliefs, reflective judgement, ways of knowing, epistemological reflection, epistemological theories, beliefs and resources. Researchers interested in personal epistemology ask questions such as "How do we know what we know?" and "How do our beliefs about knowledge and knowing influence learning?" (Burr & Hofer, 2002).

Research in personal epistemology looks into ways of knowing, focusing on the nature of knowledge (certainty, structure and source of knowledge) and beliefs about learning (speed and ability to learn). The exploration of different learning or cognitive styles and in particular the relationship between gender and epistemological beliefs in tertiary education contexts is an area of much current research focus. There are three major areas of research focus – how students view their learning experiences, how epistemological beliefs impact on reasoning, and the multidimensional nature of beliefs (see Hofer & Printrich (1997) for a comprehensive overview of epistemological theories). Understanding how our students best learn, helps us structure our classrooms to support them and much research continues to be done internationally on what 'knowing', 'knowledge' and 'beliefs' mean, and how they may vary across cultures (Khine, 2008).

Review of the literature

William Perry was a key early researcher in the field of epistemological beliefs. In the 1950s and 60s he interviewed male liberal arts students about their experiences while students at Harvard University, eventually reducing an original nine positions into four key categories of experiences: dualism, multiplicity, relativism and commitment within relativism. Perry (1970) explored the "sequence of moves through a series of positions from which students view the world of knowledge, truth and value" (p.64). Over time, he saw comparable changes mirrored in the students' world views related to their cognitive, ethical and identity development. Perry saw these changes as stemming from a combination of experiences both inside and outside university.

Following on from Perry's seminal work in this area, Belenky, Clinchy, Goldberger and Tarule (1986) took up the study of women's epistemological beliefs. The Women's Ways of Knowing, as they describe their work, concerned 'how women know what they know' and identified particular ways of knowing that women cultivated and valued, building on Perry's scheme of cognitive development by including further categories emerging from participants' reports.

In their study 135 women from a variety of contexts, educational settings and clients of human service agencies were asked about topics such as their self image, relationships, decision making, moral choices, personal growth and aspirations for the future. They explored ways in which women described their approaches to knowledge and learning. The concept of procedural knowledge (requiring conscious and systematic thinking) was introduced. Using Perry's 1970 scheme as the initial scaffold of their interviews, Belenky and her colleagues explored their data looking at how the women related to knowledge and truth and their conceptions of themselves as knowers. Their subjects described five ways of knowing – received knowledge, subjective knowledge, constructed knowledge, procedural knowledge, all similar to those of Perry, and silence. From their data Belenky et al. distilled these five epistemological positions down to focus on two: preprocedural and procedural knowing, which corresponded to 'relativism' in Perry's scheme. In 1986 this work culminated in the publication of "Women's ways of knowing: The development of self, voice and mind".

Women's Ways of Knowing (WWK) proposed five epistemological perspectives by which women know and view the world. These are (i) silence, (ii) subjective knowing, (iii) received knowing, (iv) procedural knowing and (v) constructed knowing. Procedural knowledge as an epistemological position indicates that knowing does not rely on intuition or information gathered from the content but requires conscious, systematic thinking (Brownlee, Boulton-Lewis, & Purdie, 2002). Procedural knowledge was found to consist of two forms: connected and separate knowing. In broad terms, connected knowers are more empathetic and receptive while separate knowers might be described as critical or detached. The goal for the connected knower is to understand and be understood, whereas the separate knower seeks to convince and be convinced.

Connected knowers do not seek logical or empirical explanation of a position; their aim is to understand the position rather than to test its validity (Clinchy, 1996). They try to look at things from the other's point of view, in the other's terms, "...and try to first understand the other's point of view rather than evaluate it" (Gallotti, Clinchy, Ainsworth, Lavin, & Mansfield, 1999, p.747). They are the ally, and their thinking cannot be divorced from feeling.

Separate knowing, on the other hand, requires a sense of detachment as required in critical thinking, scientific method, and textual analysis. This may take an adversarial tone, involving argument, debate, playing devil's advocate or shooting holes in another's position. The separate knower is the doubter, the one who looks for flaws in the reasoning, examining arguments with a critical eye, playing the devil's advocate.

"Separate knowers attempt to 'rigorously exclude' their own feelings and beliefs when evaluating a proposal or idea" (Belenky et al., 1986, p.103).

To investigate these forms of knowing, Belenky and her colleagues (1986) designed a 50 item survey instrument which contained statements that were either indicative of 'separate knowing' (SK) or 'connected knowing' (CK). They found that the two scales, CK and SK, did not correlate and that females were more likely to score high on CK and low on SK. Importantly, they saw that CK and SK scores were not related to performance and thus concluded that 'ways of knowing' were more reflective of a learning style or approach rather than a reflection of ability or intellectual capacity (Gallotti et al., 1999).

While researchers have found that females consistently show a high CK and low SK preference (Belenkly et al., 1986, Gallotti et al., 1999), it has been observed that neither connected nor separate knowing were significantly correlated with cognitive measures of performance (recall memory, distortion of memory, reasoning, or non-verbal intelligence). An individual's epistemological approach affects their attitude towards the learning process rather than the amount of learning that occurs (Gallotti et al., 1999). Clinchy (1996) points out that the authors of WWK did not see SK and CK as opposites nor did they wish to imply that one was better than the other. Both epistemological paradigms support critical thinking, but approach it from different angles. It is also important to remember that elements of both SK and CK can, and usually are both present in the same individual (Clinchy, 1989) and that such tendencies of preferred patterns may change over time (Baxter Magolda, 1992; 1996).

Baxter Magolda (1992) describes ways of knowing as being "related to, but not dictated by gender" (p.8). Because SK and CK are not exclusive to either gender, some such as Schommer-Aikins and Easter (2006) prefer to use the term 'ways of knowing' rather than 'women's ways of knowing'. Marrs and Benton (2009) conducted a study on relationships between separate and connected knowing with 72 men and 169 women in a community college. They found men scored higher than women on separate knowing (SK) and lower on connected knowing (CK). They noted the relationship between gender and differences in ways of knowing. In this regard Hayes (2001) reiterates that gendered belief systems can contribute to different patterns in women's and men's knowledge and approaches to learning. In her analysis she stresses that taking a new look at women's learning can reveal complexity and dynamism in educational practice.

Following on from Belenkly et al. (1986) Gallotti, Drebus and Reimer (2001) carried out four studies of college students (male and female, predominantly 'white') looking again at SK and CK. In the WWK research, subjects had been involved in extensive interviews two to five hours long. To simplify the collection of this data, Gallotti et al. (2001) designed a valid and reliable survey instrument by drawing on the original WWK papers based on the original 50 item tool, which they refined to a 20 item instrument, the Attitude Towards Thinking and Learning Survey (ATTLS). This instrument correlated highly with the original and was almost as reliable (Gallotti et al., 1999). The twenty items on the questionnaire were statements which corresponded to

an example of either a separate or connecting knowing situation or experience. The instrument consisted of an equal number of intermixed statements which described either a feature of connected or separate knowing. An example of an item designed to elicit a preference for SK reads 'I try to listen to other people's position with a critical eye' while a CK item reads 'I tend to put myself in other people's shoes when discussing controversial issues, to see why they think the way they do'. The questionnaire contained equal numbers of SK and CK items. Participants rated their agreement in a 7 point Likert scale. It was this instrument which was used to collect the data in this current pilot study.

In 2001 Gallotti et al. reported a study in which a mixed group of college students were paired up and asked to learn and play a fantasy card game. Students later rated their perceptions and reactions and those of their partner and completed the ATTLS. The ATTLS results showed the expected difference in gender with regards to CK and SK but these were unrelated to performance measures. They concluded that epistemological approaches do not affect the amount of learning that occurs but rather the attitude the learner holds towards the process (Gallotti et al., 2001). This means that although students might complete the task differently due to their epistemological approach, this would not impact their overall learning. This confirms their previous findings (Gallotti et al., 1999). Students' separate knowing and connected knowing scores, however, did predict preferences for different kinds of teaching. Those with high CK preferred their ideal teacher to be in control, accepting, helpful, facilitating, emotional, patient and understanding. In contrast, students with high SK scores identified more with a teacher who is demanding, enthusiastic, critical, analytical and who has a low degree of spontaneity and tolerance. Raters who observed the process of learning and playing the game reported differences in the 'congeniality' and cooperation of students which was later linked to a preference to connected or separate knowing. Some of these observed behaviours may be explained in part by work by Brownlee et al. (2002) who saw a correlation between students' concept of learning and the learning approaches they employ. When students learn with surface level processing such as rote-memorisation they typically view learning as a reproductive process and consequently do little reflection on the process. On the other hand students who view learning as having a creative connotation tend to use deeper approaches and form well-organised concepts.

Gallotti et al. (2001) reported that separate and connected knowing scores were not significantly correlated indicating that the two ways of knowing were independent. Schommer-Aikins and Easter (2006) stated that most people are capable of both ways of knowing but some individuals may prefer one way of thinking over another. Consistent gender differences were found. Separate knowing scores were always higher in males whereas females had always higher connected knowing scores. The connected and separate knowing scores of males were not significantly different, whereas females typically showed significantly higher connected scores.

Finally, Gallotti et al. (2001) showed that students with a high connected knowing approach enjoyed learning the game more and showed more willingness to work with their partner in their learning. These observations did not correlate with measures of

performance on the game which could be taken as an indicator of the amount of learning which took place.

However, not all studies have findings consistent with WWK. Schommer-Aikins and Easter (2006) used two instruments to investigate epistemological beliefs in a group of college students, the ATTLS to target beliefs about ways of knowing (CK and SK), and the Kardash Epistemological Belief Scale (Kardash & Wood, 2000) to measure beliefs about knowledge structure, knowledge stability, learning speed and learning ability. Gender differences were found only regarding beliefs about separate knowing as men and women were similar in CK. This is contrary to previous studies that found gender differences in connected knowing (Gallotti, et al., 1999) and they suggest this result may reflect the high percentage of Asians in their sample (Asians typically coming from a collectivist culture in which the good of the group is considered before that of the individual, thus connectedness would be important for both genders). However, the theory that both similar and connected knowing were forms of procedural knowledge, i.e. they both represent critical thinking and support higher order learning, was supported. In their study both separate and connected knowing correlated with speed of learning and knowledge construction. These authors found that ways of knowing had a possible effect on academic performance, although this effect might not be immediately obvious. Schommer-Aikins and Easter (2006) ask whether ethnic and cultural differences relate to ways of knowing and epistemological beliefs and subsequently to a student's learning and academic performance. This draws our attention to consideration of the influence that ethnic and cultural factors have on a student's ways of knowing and epistemological beliefs and how these in turn might influence interaction and work in a class room environment.

Objective of the study

The pilot study presented in this paper continues to explore the work of Belenky et al. (1986), Gallotti et al. (1999), Schommer-Aikens and Easter (2006) and others within an Arabic context - the United Arab Emirates. A group of Emirati females preparing to enter a Bachelor of Education degree were surveyed and interviewed at the end of a year-long Foundation Programme.

Exploring the epistemological beliefs of this cohort of young Muslim women presents the opportunity to investigate women's ways of knowing in a context where the culture largely segregates males and females during their education and where the education system itself is undergoing considerable review and restructure. It attempts to explore young Emirati women's beliefs about ways of knowing using the Attitudes towards Thinking and Learning Survey. The study first establishes the validity and reliability of the instrument and finds out which approach Emirati students predominantly use.

Method

Participants

Participants in this study were 167 students enrolled in their foundation year in an English medium teachers training college in the United Arab Emirates (UAE). The

participants' ages ranged from 18-21 and all participants were female. All were training to become teachers of English, Mathematics and Science, in the medium of English to local children in Grades 1-5. The majority had come straight from high school where they had studied in Arabic for 12 years with English as a second language subject. On entry into the programme their English language proficiency ranged from Elementary to Pre-Intermediate (approximately 2.5 – 3.5 on the International English Language Testing System, IELTS). In order to matriculate from the Foundation Programme, students were required to reach the equivalent of an IELTS 4.5 on the Academic Module of the test.

To see the group of participants in a geopolitical context we note that The UAE is a federation of seven emirates located in the northeast corner of the Arabian Peninsula. Since the development of significant oil reserves in the 1980s and 90s, the country has seen rapid development to become a modernised, multicultural society with a population of almost 4 million people. Emiratis make up only around 17% of the population. While the official language of the UAE is Arabic, English is the medium of instruction of public institutes of higher education. The Emirates uphold Muslim-Arab values largely driven by religious law. In this Islamic society women are seen as having a fundamental role of raising the children but are supported should they choose to follow an appropriate career, for example, teaching. Richardson observes "This male dominated society still resists the idea of women thinking for themselves, even though the UAE President is ready to support a different role for women..." (Richardson, 2004, p.433). It should be noted that these women are the first generation of women in the UAE who have had free access to public higher education.

While there is limited literature on the specific traits of UAE Arabs, Hofstede (1980) proposed a broad framework for assessing culture which might be considered to apply to a more general Arab context thus including the UAE. He identified five dimensions of culture: power distance (from small to large), collectivism versus individualism, femininity versus masculinity, uncertainty avoidance (from weak to strong) and long and short term orientation. Power distance refers to the extent to which cultures expect power relationships to be equitable (low power distance), and where group members are more accepting of autocratic, paternalistic or hierarchical positions (high power distance). Collectivism and individualism describe whether or not members of the community identify more strongly with the group or themselves as individuals. Masculinity and femininity measure whether there is an association with 'traditional' male values such as competitiveness and assertiveness or with the 'feminine' characteristics such as placing value on relationships. In societies with high uncertainty avoidance, the members prefer to minimise uncertainty and avoid this by putting rules in place, whereas cultures with low uncertainty avoidance are more accepting of flexibility and informality. Hofstede's final dimension is long and short orientation which describes the importance a society places on the future, long orientation values behaviours which affect the future as opposed to societies with a short orientation where the past and present are the focus.

Consideration of the specific of cultural dimensions of the UAE culture such as these described by Hofstede and their potential influence on the epistemological beliefs of

the subjects in this study have not been explored in this initial investigation except in the broadest sense but must be examined further.

Additionally, the possible implications for the teaching of these trainee teachers, and for other students in this context, following on from such inquiry is another potential avenue for future investigation.

Measurement

Ways of knowing were measured with the Attitudes toward Thinking and Learning Survey (ATTLS) (Gallotti et al., 1999). Necessary permission to use the survey in this context was sought from the original developers.

Procedure

The 20-item ATTLS was translated into standard Arabic. The students were provided with the instrument in English alongside the Arabic translation. The level of agreement to each statement is provided with a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Students from 17 classes took the paper-based survey during their lesson time.

Following a mixed methodology approach, 10 students from the cohort were interviewed in order to triangulate the survey results. During the semi-structured interviews the students were asked six questions, three related to connected knowing and three to separate knowing, to elicit whether they did in fact demonstrate qualities of connected knowers i.e. that they tried to see things from the perspective of another, that they listened to and cared about others and tried to incorporate the opinions of others in their thinking. The initial questions were followed by additional probing questions to encourage expansion to gain further information on their beliefs. The interviews were conducted in English with both English and Arabic translations of the questions provided. The interviewees were given the option of responding in either English or Arabic and care was taken not to use any leading language in the question prompts or follow-up questions. Subjects' responses were recorded and transcribed. This was an opportunity to explore more deeply the experiences of these women with respect to their preferred way of knowing. It allowed us to further probe the issue of whether or not the students understood the concepts explored in the ATTLS, to see to what extent they might be able to articulate a connected or separate way of knowing.

Translation process

The first or additional language of our students was, in general, the colloquial local form of Gulf Arabic, and as the group had mixed levels of English language ability, the items were translated so that the final version included both the English and standard Arabic wording, allowing the students to read either or both. The questionnaire was translated (English to Arabic) and back translated (Arabic to English) twice by bi-lingual native Arabic speakers before the final version was agreed. Despite these steps, analysis of the data showed that two questions had proved problematic and the

responses to two questions were statistically unreliable. At this stage a further translation was sought, this time from a highly qualified and skilled linguist and translator who confirmed that the Arabic translations were correct but the poor reliability of these two items raised several issues. The original wording of the items was:

1. I like playing devil's advocate.
2. It's important for me to remove myself from analysis of something and remain objective as possible.

Discussions with the Arabic linguist highlighted some of the potential difficulty non-native speakers might have with the relatively complex grammatical structures if they had chosen to read the English statements. She also commented on the abstract conceptual nature of the statements. The use of the word 'devil' might have also been controversial in this Muslim context (although the Arabic translation was not literal and did not use the Arabic equivalent, but instead paraphrased). Having extensive experience working and teaching in the context, she expressed doubts/concern over whether the students would understand the concepts being explained, even in their native tongue, let alone their ability to relate them to their own beliefs or experience. She felt that rather than being an issue only for this group, it might in fact be a case for many people in this context, particularly of this age group.

Results

Reliability and validity

Initially the reliability and validity of the ATTLS questionnaire was established. To determine the degree to which items in the same scale measure the same aspects of students' ways of knowing, a measure of internal consistency, the Cronbach alpha reliability coefficient (Cronbach, 1951) was computed. It was found that the reliability coefficient for Connected Knowing scale yielded 0.79 and Separate Knowing scale yielded 0.56. It was found that Separate Knowing items 2 and 3 are causing the problem with low reliability. When these two items were removed the Cronbach Alpha for this scale increased to 0.62. Both coefficients are greater than 0.6 and therefore considered to be in the acceptable range (DeVellis, 2003).

To identify the dimensions of the questionnaire, principle component factor analysis was computed with varimax rotation. Kaiser's (1960) criterion (eigenvalue greater than 1.0 rule) was used to determine the initial number of factors to be retained for rotation. This was used in conjunction with an analysis of the scree plot and the percentage of variance accounted for by the factor solution. An examination of the scree plot of eigenvalues gave an indication suggestive of two-factor solution. The two-factor solution was computed and rotation converged in 3 iterations with factor loading ranging from 0.449 to 0.670. In addition the Keiser-Meyer-Olkin measure of sampling adequacy yielded a high value of (0.818) and this indicates that the factor analysis used to validate the questionnaire may be useful to confirm the constructs.

Connected knowing and separate knowing scores

Table 1 shows the mean scores of Connected Knowing and Separate Knowing scales. The mean scores for CK and SK were found to be 55.6 and 44.7 respectively. One way t-test shows that the difference between CK and SK scores are statistically significant at $p<0.001$ level.

Table 1: Mean scores of CK and SK

Variable	Mean	SD	Minimum	Maximum
Connected Knowing	55.6	8.32	23	70
Separate Knowing	44.7	7.45	24	60

Interviews

In the structured interviews with ten Emirati students responses showed a predominantly connected way of learning. They consistently agreed that it was important to understand what others thought and felt. For example, one student said "When I can understand them, I can feel them; I can feel what they feel.... It's good when you learn about other people, what they think, what they think about the life" (Student 0028). "If you want to understand any person, you must to understand the way to thinking" (Student 0030). Student 0027 described 'putting herself in another's shoes', "Maybe in class, maybe something the teacher is said and some girls agree and doesn't agree and I thinking about that I put myself in every person....". Another said "... I think that if I know about her or she I can connect with her and deal with her very easy and how to teach her in her style, in her thinking about it" (Student 0023). Similarly, Student 0024 stated "Usually I hope to understand others, how they think, because when you know someone, how he or she thinks, you can connect with them by the way what they think.... This is the life – when you connect with other people, know more about them, you can know more about other characters, you can change yourself by someone, correctly I mean". Student 0003 reported that "If I know how (people) think I can communicate with them". Only one student (Student 0026) indicated that she didn't always try to understand others. She commented that if someone's thinking was 'difficult', or very different to hers, she saw their way of thinking as connected to them only, not to her and she did not feel the desire to really understand their point of view. Analysis of the interviews reflected the results of the questionnaires, namely, that the women generally took a connected way of knowing whereby it was important for them to understand and to be understood.

While all the students interviewed agreed on the importance of connecting with other people when trying to understand, a number of students also made statements which indicated an element of separate knowing, a desire to question, to seek explanation, for example, "Sometimes, if I didn't understand some topics I prefer to ask a questions, to understand more, to know more, because I don't like to study things I don't understand it" (Student 0024). The same student explained that she would always try and explain her thinking and feeling to others who might hold a different opinion but 'If I am really agree I am true, I try as much as I can to explain my idea for them to make them

understand me why I think this way but if they didn't understand things, I would stop things because I don't want to argue". One student showed a typical separate knowing approach, describing herself in the role of the 'devil's' advocate, "I like to be on different side of those who speak with me... maybe if you agree I will don't agree with this. If I agree, I say I don't agree because I want to show the different" (Student 0026).

It is possible that the responses to the prompts were influenced by the context and by the students' current experience of being in the first year of tertiary study. One student (Student 0024) reflected that before she had come to college she had mostly followed her feelings but that since coming to college she had grown to appreciate the importance of thinking. "In the past, before I come this college, I think just my feelings, but now, no, in facts because in our life there are many things we should think before do it....because when you think about things you can do in the correct way and not lose the chance."

These interviews provided a rich source of data which remains to be further explored. The patterns observed in the responses seem to confirm Belenky et al.'s claim that individuals draw on both connected and separate ways of knowing (1986) and also indicate that the women's ways of knowing may have been influenced by their college studies.

Further in-depth interviews are necessary to explore the belief system of this cohort and how it influences their attitudes to thinking and learning. This initial study did not attempt to investigate the potential influence of such as societal and religious factors.

Discussion

As indicated above the results show that Emeriti female students prefer connected ways of knowing and interviews with selected students showed that students use predominantly connected ways of learning. These students were studying in all female classes with both male and female teachers. In the UAE where all public education is segregated after K5, consideration of matching teaching with epistemological beliefs of students is perhaps more possible than in other situations where genders are mixed and the cultural background of the students is less homogeneous. The college in which these students were enrolled was broadly based on a 'western' model of education. Richardson (2004) suggests that many of these concepts may not lend themselves to the Arab, Islamic beliefs and values of the society in the UAE. She argues that educational practices must be filtered through the local culture if they are to be successfully adapted.

Gallotti et al. (2001) noted that according to the WWK framework, learning occurs in different ways for different people in different situations, and may be affected by the learning styles of others who are present. According to Gallotti et al. (1999), students tend to prefer teachers whose style reflects their own. Schommer-Aikens and Easter (2006) find it likely that teachers' personal epistemological paradigms would impact on their decisions about forms of instruction, curriculum and evaluation. Should this be the case, an awareness on the part of the teacher and the learners of the predominant or

favoured ways of knowing within a learning context might be seen as a useful tool in designing classroom activities which take into account student diversity.

This study has highlighted the need for consideration to be given to the language of the translation and the appropriateness of questions for specific contexts. Findings also show the importance of recognising and acknowledging the cultural belief system of subjects and its potential impact before drawing conclusions. The UAE is a Muslim country which is collective in nature. Only female subjects were surveyed and interviewed.

This is only an exploratory study. Significant further exploration is required before drawing any conclusions regarding the ways of knowing of this group of Emirati women. These issues include careful consideration of the translation of the original instrument, and its appropriateness in this context, as well as a more detailed investigation of the cultural considerations and their possible impact on the generalisability of the findings.

However, even this initial analysis of the findings confirms some of the findings of earlier research (Belenky et al., 1997), (Gallotti et al., 1999), (Schommer- Aikens & Easter, 2006), namely that while ways of knowing may not be gender specific, that these Emirati females, like many other women, tend to have a preference for connected over separate ways of knowing. This finding has possible implications for teaching and open avenues for further research. It confirms the observation that female students tend to use more connected knowing approach to learning. According to data collected with ATTLS, Emirati women appear no different from women in other parts of the world in this respect. The results of the questionnaire were confirmed by the follow-up interviews.

Conclusion

According to Baxter Magolda (1992) students interpret their educational experience as a result of their assumptions about the nature, limits, and certainty of knowledge. The exploration of the epistemological beliefs of any individual or group within any society is a complex one, but such investigations have a number of potential implications for students and their teachers. A greater understanding of our students' epistemological paradigms helps us become more aware of how we approach our teaching and how we can better help them grow towards a deeper understanding of themselves as learners. While this pilot study would seem to confirm earlier studies in indicting that women prefer a connected way of knowing, the use of the ATTLS in this Arabic context has raised many points for consideration in the planning and execution of further studies.

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