

## Unlocking the hidden power of worldviews: a new opportunity for the transformative Education for Sustainable Development

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### ABSTRACT

The field of Education for Sustainable Development (ESD) has evolved from an applied science approach with a positivist orientation dominated by the connection between logical knowledge and behavior, to a range of more holistic approaches aimed at the deep transformation of the self by questioning the meaning of human experience. This paper explores the potential for the concept of a worldview to help achieve ESD's transformative agenda. We present an empirical study based upon the newly developed Transdisciplinary Framework of Worldviews and Behaviors (TFWB)<sup>1</sup>, and explore the implications of a worldviews approach within ESD practice.

A worldview is a complex constellation of meaning from which the wide range of human conduct emerges; it is the uniquely personal and subjective meaning given to reality, which explains each life experience prescribing patterns of emotions, thoughts and actions. It is a hierarchical network of significance framing relationships with ourselves, and between the environment and ourselves. Mental states, attitudes, choices and behaviors are derived from this network. Therefore, the worldview concept can help to explore how people apprehend and make sense of their own reality, form their unique structures of meaning and choose their way of being, becoming and behaving.

The deep transformation of the self is inherently dependent on the transformation of the worldview, and yet there has been limited exploration of this concept in the ESD context. Consequently, we first developed the TFWB as a theoretical explanation of what worldviews are and how they are mentally formed and physically expressed through the wide range of human conduct the body can display. In this paper we build upon the TFWB through an in-depth qualitative study of the personal worldview of twenty-five randomly selected adults from Sydney, Australia. Participants' worldviews were explored in three steps. Initially, they completed an online multiple-choice survey based on Hedlund-de Witt's worldviews typology and questionnaire<sup>2</sup> focused on the identification of ontological, epistemological, axiological, anthropological and sociological perceptions.

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<sup>1</sup> Emilia de la Sienra, et al. "Worldviews, A Mental Construct Hiding the Potential of Human Behaviour: A New Learning Framework to Guide Education for Sustainable Development." *Journal of Sustainability Education* 13 (2017).  
[http://www.susted.com/wordpress/content/worldviews-a-mental-construct-hiding-the-potential-of-human-behaviour-a-new-learning-framework-to-guide-education-for-sustainable-development\\_2017\\_04/](http://www.susted.com/wordpress/content/worldviews-a-mental-construct-hiding-the-potential-of-human-behaviour-a-new-learning-framework-to-guide-education-for-sustainable-development_2017_04/)

<sup>2</sup> Annick Hedlund-de Witt, et al. "Exploring inner and outer worlds: A quantitative study of worldviews, environmental attitudes, and sustainable lifestyles" *Journal of Environmental Psychology* 37 (2014):40-54.

Then, they participated in a personal semi-structured interview where they discussed their responses to the questionnaire and behaviors that they identified as representative expressions of their worldview. Follow-up questions administered two months later provided an opportunity to prompt and capture insights and reflections arising from the experience of the interview.

This empirical research revealed a general struggle among the participants to recognize their own worldview, how it is formed and how it determines the way participants behave. Based on these empirical results and the theoretical TFWB, we argue that transformative ESD needs new foundations, based on positioning worldviews at the center of a potential new learning approach. Such an approach would aim to improve the self-recognition of how and when we sense and apprehend the world and build meanings, deepening comprehension of what those meanings are and how they determine the ways people feel, think and act.

The theoretical TFWB and the empirical evidence presented here represent the foundations for a new transdisciplinary learning approach that leverages the hidden power of worldviews which are potentially useful in encouraging self-observation, reflection, and a potential transformation of meaning making about ourselves, others and the environment. This approach could contribute to the ESD's transformative goals by guiding the design of innovative learning experiences that boost introspection and generate new conceptualizations about how worldviews shape what it means to be human.

## 1. INTRODUCTION

Education for Sustainable Development (ESD) is nowadays moving towards a profound philosophical transformation based on a deeper exploration of human psychology<sup>3 4</sup>. The focus is no longer on the knowledge or willingness required to change human activities and behaviors, but on the investigation of the multiple determinants shaping the human identity<sup>5</sup>. Emotional understanding, the role of life experiences, and the identification and inclusion of diverse ways of being, are the new priorities in ESD<sup>6</sup>. Attention is now placed on the inherent and exclusively human capacity that is to build, change and transform the meanings of any experience at any time<sup>7</sup>; consequently determining new patterns of emotion, thought and action derived from such meanings.

This paper contributes to this transition by presenting empirical research that explored the self-recognition of personal worldviews. This paper begins with a brief review of the potential connections among the new challenges in ESD, worldviews, and Transformative Learning Theory, setting the scene for the relevance of this work. Then, the qualitative methodological design is explained and the main empirical findings are

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<sup>3</sup> UNESCO. *Education as a driver for Sustainable Development Goals, Plan of Action*. Ahmedabad, India (2016).

<sup>4</sup> Robert B. Stevenson, et al. "The evolving characteristics of environmental education research" In *International Handbook of Research on Environmental Education*, (2013) 512-528. NY, USA: Routledge.

<sup>5</sup> Yona Sipos, et al. "Achieving transformative sustainability learning: engaging head, hands and heart." *International Journal of Sustainability in Higher Education* (2008) 9 (1):68-86.

<sup>6</sup> UNESCO. 2016.

<sup>7</sup> Melissa Hogenboom. "Humans are nowhere near as special as we like to think." *BBC Earth* (2015). <http://www.bbc.com/earth/story/20150706-humans-are-not-unique-or-special>

analyzed. Finally, this paper outlines the implications of such findings for transformative learning and discusses the foundations for a new learning approach that leverages the hidden power of worldviews to support the transformative agenda of ESD.

## 2. THE TRANSFORMATIVE POTENTIAL OF A WORLDVIEWS APPROACH

It has been argued that ESD has been fruitful in raising awareness about the need to change unsustainable patterns of behavior, but has not been successful enough in making that change happen<sup>8 9</sup>. Until recently, ESD has focused primordially on the analysis of how individuals and communities manage the environment, without exploring further what are the underlying dominant meanings that have been historically attributed to those three concepts and their interactions<sup>10</sup>.

ESD researchers, practitioners and policymakers recently decreed the Ahmedabad Plan of Action. This plan recognizes that achieving the UN Sustainable Development Goals requires no less than a transformation of education itself: '*dominant education systems have tended to impose a narrow conception of rationality at the expense of emotional understanding, learning acquired through life's experiences and traditional knowledge systems. Additionally, the transformative education that is now called for is not amenable to easily defined outcomes or measurement. Education must be reconceived in a way that allows space for diverse ways of knowing and new ways of being and becoming that reflect inclusivity in the true sense of the term*' (3)<sup>11</sup>. The intent is to enable the creation of a new narrative, distinct from the one rooted in the unsustainable paradigms of the modern era. Encouraging a deep exploration of what individuals, communities, and the environment actually are, will inherently prompt the opportunity to explore what they could be. Enabling the creation of a new narrative that is open to explore new possible meanings of reality and human existence will provide new ways to apprehend the world and create potential for alternatives to the current unsustainable tendency.

Research and practical efforts to advance and accelerate the transformative agenda of ESD have recently begun to surface across different disciplines and approaches; and part of this work includes the discussion about the influence of worldviews on human conduct<sup>12 13 14 15</sup>. More specifically, some of the increasing interest in worldviews relates

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<sup>8</sup> Andrew Stables. "The unsustainability imperative? Problems with 'sustainability' and 'sustainable development' as regulative ideals." *Environmental Education Research* (2013) 19 (2):177-186. doi: 10.1080/13504622.2012.729813.

<sup>9</sup> Charles Saylan, et al. *Failure of Environmental Education (and How We Can Fix it)*. Edited by University Press. (2007) 1st ed. Berkley, California, USA.

<sup>10</sup> Sirous Mahmoudi, et al. "Holistic Education: An Approach for 21 Century." *International Education Studies* (2012) 5 (2):178-186.

<sup>11</sup> UNESCO. 2016.

<sup>12</sup> Julie Devlin. "Conflicting Ideologies in Environmental Problem Solving: Conceptualization and Measurement of Worldviews." (2010), University of New Brunswick.

<sup>13</sup> John Harraway, et al. "Exploring the Use of the Revised New Ecological Paradigm Scale (NEP) to Monitor the Development of Students' Ecological Worldviews." *The Journal of Environmental Education* (2012) 43 (3):177-191.

<sup>14</sup> Rituma Patel. "Environmental Beliefs, Values, and Worldviews: Etiology, Maintenance, and Transformation." Doctor of Psychology, Department of Graduate Psychology, James Madison University (2008).

<sup>15</sup> Maarten Van Opstal, et al. "Knowledge for sustainable development: a worldviews perspective." *Environmental Development and Sustainability* (2013) 15:687-709.

to the quest to understand to what degree this mental construct might encompass the 'hidden power' to break through existing limitations regarding the achievement of more sustainable ways of being<sup>16</sup>.

This paper builds upon the recently published Transdisciplinary Framework on Worldviews and Behaviors (TFWB)<sup>17</sup>, a theoretical explanation of what worldviews are, how they form and how they determine the wide range of human conduct. Based on empirical work, this text suggests that the self-recognition of personal worldviews and their influence on daily behaviors, could eventually disclose the underlying meanings through which people live day-to-day. Self-recognizing worldviews and how they manifest on a daily basis could potentially unlock a critical assessment of uncritically ingrained meanings, opening up the possibility for change and transformation. The self-recognition of a personal worldview could prompt individuals to differently signify the self, others and the world. A fuller comprehension of worldviews might help current and future generations to address deeply ingrained but currently hidden or implicit meanings<sup>18</sup>, which could lead to personal transformations, including unsustainable patterns of emotions, thoughts and actions.

Regarding the critical assessment of uncritically ingrained meanings, Mezirow's Transformative Learning Theory (TLT)<sup>19</sup>, provides an optimal analysis framework. At its core, the TLT argues that people can experience the transformation of meaning systems through certain types of experiences, triggering critical self-reflection which may result in an expansion of consciousness. Transformative learning is facilitated through consciously accessing and radically changing the symbolic contents of the unconscious by critically analyzing the conflicting underlying premises<sup>20</sup>. This theory explains human psychological change, through critically questioning and assessing the integrity of deeply held meanings about the self, others and the world<sup>21</sup>. This expansion of consciousness through the transformation of basic meanings is a process that occurs rarely in the spontaneity of life, but can be facilitated through intentional learning experiences<sup>22</sup>.

According to Mezirow, people undergo a personal transformation when experiencing the following recognizable phases<sup>23 24</sup>: 1) a disorienting dilemma; 2) self-examination with

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<sup>16</sup> Steven Schein. *A new psychology for sustainability leadership: the hidden power of ecological worldviews* (2015). Greenleaf Publishing.

<sup>17</sup> De la Sienra. "Worldviews, A Mental Construct Hiding the Potential of Human Behaviour: A New Learning Framework to Guide Education for Sustainable Development" 2017.

<sup>18</sup> Schein. *A new psychology for sustainability leadership: the hidden power of ecological worldviews*. 2015.

<sup>19</sup> Jack Mezirow. *Evaluating Statewide Programs of Adult Basic Education: A Design With Instrumentation*. (1975) Center for Adult Education, Columbia University. NY, USA.

<sup>20</sup> Susan Imel. *Transformative Learning in Adulthood*. (1998) ERIC Digest.

<sup>21</sup> Jack Mezirow "Transformative Learning as Discourse." *Journal of Transformative Education* (2003) 1 (1):58-63.

<sup>22</sup> Jack Mezirow, et al. *Transformative Learning in Practice: Insights from Community, Workplace, and Higher Education*, The Jossey-Bass Higher Education Series. (2009) San Francisco, California USA: Jossey-Bass Imprint.

<sup>23</sup> Andrew Kitchenham. "The Evolution of John Mezirow's Transformative Learning Theory" *Journal of Transformative Education* (2008) 6 (2):104-123. DOI: 10.1177/1541344608322678

<sup>24</sup> Jack Mezirow. "Transformative Learning: Theory to Practice" *New directions for adult and continuing education*. (1997). Jossey-Bass Publishers.

feelings of guilt or shame; 3) a critical assessment of assumptions; 4) recognition of one's (and other's) discontent; 5) exploration of new roles, relationships and actions; 6) planning a course of action; 7) acquisition of knowledge and skills for implementing one's plans; 8) provisional trying of new roles; 9) building of competence and self-confidence in new roles and relationships; 10) a reintegration into one's life on the basis of conditions dictated by one's perspective.

In this study, the empirical research design aimed to explore in practice what happens when people are asked to self-recognize their own personal worldview, what people are aware of/know about their personal worldview, and its expression through their everyday life behaviors. This empirical design aimed to explore if the self-recognition of one's own personal worldviews could open the possibility to critically assess uncritically apprehended meanings. Because the findings show that self-recognizing personal worldviews resembles some of the phases of a transformative learning experience, this paper puts forward the foundations for a new learning framework with worldviews at its heart. This work suggests that a worldviews approach to learning represents a new opportunity for the transformative agenda of ESD.

### **3. METHODOLOGY TO EXPLORE PERSONAL WORLDVIEWS**

The first methodological task was to recruit volunteers open to self-explore their personal worldview. Based on Hedlund-de Witt's tool to assess and classify worldviews<sup>25</sup>, an online survey was created. By handing out more than four hundred brochures to random people in the streets of Sydney, Australia, potential participants were invited to answer the survey. Fifty-four people completed it and were invited to a one-on-one semi-structured interview to explore their answers. Twenty-five people were interviewed.

Interviews comprised three components. The first component was the self-recognition of their personal worldview as a whole entity. Four worldview options were identified by a specific label (traditional, modern, postmodern or integrative), where each type of worldview corresponded to a characteristic set of perceptions from five meaning systems (ontological, epistemological, axiological, anthropological and sociological)<sup>26</sup>.

Participants were given visual and verbal descriptions of each of the four worldview classifications, and asked to self-nominate the worldview that best represented them. The worldview suggested by the online survey was then revealed to the interviewee. Participant responses to similarities and differences between the self-nominated and survey-assessed types of worldview were closely observed and recorded.

In the second and longest component of the interview, participants were asked to explain why they chose particular perceptions as the most representative of themselves and they were asked to rephrase the perception they chose in the survey in their own words. Participants were then asked to share examples from everyday behaviors that embody those perceptions. An example is presented in Table 1.

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<sup>25</sup> Hedlund-de Witt. "Exploring inner and outer worlds: A quantitative study of worldviews, environmental attitudes, and sustainable lifestyles" 2014

<sup>26</sup> Annick Hedlund-de Witt. "A new tool to map the major worldviews in the Netherlands and USA, and explore how they relate to climate change" *Environmental Science & Policy*. (2016) 63:101-112.

Table 1. Example of exploring alignment between selected perceptions from the online questionnaire, rephrasing the perception and describing a representative behavior.

Participant 36A (example of an epistemological perception):	
The original statement in the questionnaire, describing a specific epistemological perception, is:	'When I'm forming an opinion on an issue, I tend to trust scientists and other experts.'
When the participant was asked to explain why they chose this sentence as the most representative of their worldview and explain it with their own words, he said:	<i>'...we have to wait until something is proved to be true, then I will believe it for sure, rather than believe in someone who hasn't actually proved it, because that could be wrong'</i>
Once the participant articulated their own understanding of their perception, they were then asked to share an example of a daily behavior embodying the perception. He provided an example of a potential behavior, and a current one:	<i>'Vaccination and those links to autism, you know, a lot of parents are scared of that, but scientists say that the risks are so low, and the benefits are so high, I believe in what scientists say so if I would have children I would vaccinate them'</i>  <i>'I guess when I go to work and stuff, because I work in dental therapy, so basically if I am not sure about something, about like how a chemical reacts, I have to check it online, the research papers, rather than just asking someone's opinion. I need the back up to make sure it's right'</i>

The third component of the interview involved a final reflection of the overall experience of self-recognition of personal worldviews. Two to three months after the interviews were conducted; each interviewee was asked follow-up questions with the purpose of identifying the nature of self-reflection that may have emerged after participating in this study. Out of the 25 interviewees, 13 responded the follow-up questions.

The main analytical framework employed to draw out the richness of the data was the TLT, for the reasons outlined above.

#### 4. ANALYSIS OF EMPIRICAL FINDINGS

##### a) Initial self-recognition of a personal worldview as a whole entity

Hedlund-de Witt's questionnaire provided a practical means for individuals to grasp the complex and abstract idea of what constitutes their own worldview.

In half of the group there was alignment between the self-nominated and the survey-assessed types of worldviews. This experience prompted different combinations of emotions; particularly, certainty and uncertainty of how well a personal worldview might be known, and satisfaction or dissatisfaction about the match or mismatch from the comparison. Out of twenty five participants, seventeen expressed satisfaction probably due to the experience of some confidence, fulfillment, achievement, reassurance, and acceptance of their own worldview. For example participant 7J said: *'Well I know what I stand for'*; participant 26J expressed: *'Ok, I feel good, I think it makes sense'*; 36A said:

'It's fine for me, I feel comfortable'; 39P explained: 'Yes, it makes sense; it is in line with my explanation before'; and 42H said: 'It's what I expected, yes'. Eight people expressed some dissatisfaction and showed subtle manifestations of disregard, defensiveness, contempt, surprise and irony. For example, participant 14I said: "Ok, I'm surprised a little bit. I'm not sure what aspects of that would be descriptive of my opinions, but yeah"; and participant 29N expressed: 'I don't know...I think...I guess...(I feel) a little bit of discomfort...like I'm a little bit surprised, to be honest'. As observed, this initial exercise evoked an emotional response from the participants.

Emotions evoked by this process prompted critical self-reflection. Emotions constitute 'the fundamental aspect of mental life'<sup>27</sup>, the central energy that activates information processing (intelligence) and meaning-making (learning)<sup>28 29</sup>. Similarly, it has been argued that a disorienting dilemma, noted in TLT as the potential beginning or phase one of a transformative learning process<sup>30</sup>, is inherently triggered by difficult or confronting emotions<sup>31 32</sup>. These can reflect a compromising situation where meanings are confronted, in which critical self-reflection is prompted, allowing the potential assessment, adjustment or transformation of such meanings<sup>33</sup>. Emotions are a complex phenomenon to study; in this research, they are considered as indicators and predecessors of critical self-reflection. Comparing the self-nominated and the survey-assessed types of worldviews evoked emotions and prompted critical self-reflection; thus, it could be argued that such a comparative experience resembles the first step in a transformative learning experience.

a) More detailed self-recognition of a personal worldview

Participants responded differently and often inconsistently when self-recognizing their personal worldview in more detail. The second component of the interview delved into more detail about each participant's self-recognition of their personal worldview. It was possible to observe inconsistency throughout the interview with variations in their capacity to recognize and express themselves. A few participants provided clear explanations of their perceptions and examples of behaviors well aligned with such perceptions (Tables 1 and 2). The majority of the group struggled to rephrase the selected perceptions, to explain why they selected them, or to describe a representative example of behavior, regardless of the type of perception being discussed (Table 3). Sometimes this lack of consistency was repeatedly expressed by the same participant as the interview progressed; the same person provided clear explanations at one point then later struggled to explain her/himself, or vice versa.

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<sup>27</sup> Daniel Siegel. "Toward an Interpersonal Neurobiology of the Developing Mind: Attachment relationships, mindsight, and neural integration." *Infant Mental Health Journal* (2001) 22 (1-2):67-94.

<sup>28</sup> Daniel Siegel. "Mind, brain and relationships: The Interpersonal Neurobiology Perspective" In *The Developing Mind*. (2012) 25-57. NY, USA: The Guilford Press.

<sup>29</sup> De la Sienna. "Worldviews, A Mental Construct Hiding the Potential of Human Behaviour: A New Learning Framework to Guide Education for Sustainable Development" 2017.

<sup>30</sup> Jack Mezirow, et al. "How Critical Reflection Triggers Transformative Learning" In *Fostering Critical Reflection in Adulthood*. (1990) 1-20. Jossey-Bass.

<sup>31</sup> Edward Taylor. "Rationality and emotions in Transformative Learning Theory: A neurobiological perspective" (1996) *37th Annual Adult Education Research Conference*, Tampa, Florida.

<sup>32</sup> Kaisu Malik. *Human Development Report* (2014) New York, USA, United Nations Development Program. Accessed August 2017. DOI: 10.1177/0741713611402047

<sup>33</sup> Mezirow. "How Critical Reflection Triggers Transformative Learning?" (1990).

Table 2. Example of exploring alignment between selected perceptions from the online questionnaire, rephrasing the perception and describing a representative behavior.

Participant 40J (sociological perception):	
Original statement:	In society, we should place more emphasis on inner growth and self-actualization
In participant's own words:	<i>'I guess I was just thinking about it (inner growth) just as personal development, or trying to better yourself by noticing patterns of behavior that you might want to change or fix'</i>
Example of behavior:	<i>'One of the biggest things I've done recently is to stop drinking, that's one of the best things I've done. And then even just coming here, you know, my natural instinct would be to shy away from these things but I thought, you know, just do it, you got time so, and yeah, go and see what happens. I don't want to be stuck as the same person doing the same things the whole time'</i>

Tables 1 and 2 show two moments where two participants provided a clear understanding about their own perceptions. The only difference between both tables is that the first column in Table 1 provides more detail about the methodological strategy. They both display moments where participants were sharing clear examples of their behaviors embodying their perceptions. In contrast, Table 3 displays five instances where five participants struggled to provide examples of their behaviors, or to rephrase the relevant perception.

Table 3. Examples of lack of clarity when describing, or lack of alignment between a selected perception, and describing the representative behavior.

Participant 11M (axiological perception):	
Original statement:	The most important thing in my life is to actualize my inner potential and thereby serve the cultural evolution of humanity
In participant's own words:	<i>'That's an interesting choice...ok...that must have been the best fit out of a few...yeah...if I wanted to be successful, I wouldn't be doing science...I just think that you should try, and lead by example...yeah, rambling'</i>
Example of behavior:	<i>'I don't know...yeah, that's weird, because every day tends to be different depending on...I'll come into the laboratory every morning...What was the, remind me of the question again'</i>
After some silence, second attempt:	<i>'Not particular things, because there's so many, yeah, there's no specific thing...at the moment, the focus is on multiple things...so there's nothing on a day-to-day basis that I can point to and say this is helping me achieve what I wanna do...sometimes I just think to myself, bugger, I'm just gonna disappear and go and ride my bike, be done with that. So... there's not one thing that I could say that actually helps, sorry'</i>
Participant 40J (ontological and epistemological perceptions):	
Original statement:	Nature is fragile so humans can easily destroy its delicate balance
In participant's own words:	<i>'I guess nature is this complex system that can be easy to sort of disrupt. I don't have a deep understanding of this stuff at all. From my basic general understanding it has a delicate</i>

	<i>balance that it's easy to disrupt, I guess'</i>
Example of behavior:	<i>'I don't know. I don't drive, but because I'm too lazy not necessarily because of nature'</i>
Original statement:	When I'm forming an opinion on an issue I try to honor all perspectives and combine them into a larger whole.
In participant's own words:	<i>'I don't really think of myself as a very opinionated person, I never feel like I have enough information to sort of make a decision or have an opinion. I always try to think about different perspectives, other people's positions'</i>
Example of behavior:	<i>'Not that I can think of...I spend a lot of time alone'</i>
Participant 6C (ontological perception):	
Original statement is:	The universe is governed by mechanical, natural laws
In participant's own words:	<i>'The reason I chose that statement...I can't remember what the alternatives were as to why I thought that was the best...but I don't really'</i>
Participant 8B (ontological perception):	
Original statement:	When it comes to interfering with nature, mankind has no right to play God
In participant's own words:	<i>'Ok so the point would be...I've forgotten what I was gonna say...yeah, I can't remember what got me going on that one now'</i>
Participant 42H (anthropological perception):	
Original statement:	Human behavior tends to be rational and functional
In participant's own words:	<i>'Human behavior is...I'm not really sure about that'</i>

The majority of participants in this study struggled to articulate their experience of self-recognition of their personal worldview. The five examples provided in Table 3 represent the most common situations observed during the twenty-five interviews. The majority of the participants struggled to remember why they selected a specific statement in the survey, or to rephrase such a statement with their own words, or to describe an example of their own actions that could be representative of the selected statement. Throughout their quotes it is possible to observe both self-reflection (inspection and evaluation of one's own thoughts, emotions and behaviors); and insight (clarity of understanding such thoughts, emotions and behaviors)<sup>34</sup>. The interview questions were designed to explore self-reflection through participants' rephrasing; and insight through their selection of representative behavioral examples. These two mental capacities (self-reflection and insight) are fused into Mezirow's definition of critical self-reflection<sup>35</sup>.

As discussed by Mezirow, critical self-reflection is a mental skill that requires conscious and focused attention on the subjective experience<sup>36</sup> and the meanings given to such experience<sup>37</sup>. The variations in critical self-reflection observed in this research represent

<sup>34</sup> Paul Silvia, et al. "Evaluating self-reflection and insight as self-conscious traits." *Personality and Individual Differences* 50 (2011):234–237.

<sup>35</sup> Mezirow. "How Critical Reflection Triggers Transformative Learning?" (1990).

<sup>36</sup> Jonathan Schooler, et al. "Minding the mind: the value of distinguishing among unconscious, conscious and metaconscious processes" *Handbook of Personality and Social Psychology*, edited by American Psychological Association. (2015) 179-202.

<sup>37</sup> Lillian Hill. "The Brain and Consciousness: Sources of Information for Understanding Adult Learning" *New Directions for Adult and Continuing Education* (2001) John Wiley & Sons.

variations in participants' capacity to sustain conscious and focused attention. This, in turn, could be explained by the premise that the conscious experience is fluid and intermittent and rarely remains on one topic for an extended period of time without deviation<sup>38 39</sup>. The dynamic nature of consciousness is illustrated by the experience of mind wandering, in which attention switches from a current task, like answering a specific question during an interview, to unrelated emotions and thoughts<sup>40</sup>. Participants in this study self-narrated their personal stories; displaying the permanent attentional flow in the stream of consciousness<sup>41</sup>

As explained by Mezirow<sup>42</sup>, the volatile, unstable or impermanent mental capacity to critically self-reflect is the crucial element on which his theory was built, because of its potential to increase sustained consciousness<sup>43</sup>. His main premise is that people uncritically accept and internalize someone else's perceptions. It is not until such perceptions are challenged by an experience, like being asked to self-recognize one's own worldview, that people face the opportunity to practice focused attention and critically self-reflect on their perceptions and, eventually, transform them into new perceptions formed by new meanings<sup>44</sup>. The importance of becoming more critically self-reflective is explained in the third phase of a transformative learning experience. This involves the critical assessment of conflicting perceptions. Participants in this research did explore some of their conflicting perceptions and also how they have been expressed through everyday behaviors. Thus, self-recognizing personal worldviews and exploring the links between one's own worldview and one's own behavior has the potential to resemble the third phase of a transformative learning experience.

The third component of the interview involved a final reflection of the overall experience of self-recognition of personal worldviews. Despite the challenges and discomfort, self-recognizing one's own worldview was reported as an enriching experience. Despite the difficulty involved in accessing and making sense, all participants reported having an enriching experience; probably because of the implicit opportunity to explore and improve the coherence (alignment) of their personal narratives<sup>45 46 47</sup>; an opportunity likely to have facilitated discovery of possible new meanings, or the adjustment (or transformation) of old ones. For example, participant 41C expressed her views on

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<sup>38</sup> Jonathan Smallwood, et al. "The Science of Mind Wandering: Empirically Navigating the Stream of Consciousness" *Annual Review of Psychology* 66 (2015):487-518.

<sup>39</sup> Jonathan Smallwood, et al. "When attention matters: The curious incident of the wandering mind" *Memory and Cognition* (2008) 36 (6):1144-1150.

<sup>40</sup> Smallwood. "The Science of Mind Wandering: Empirically Navigating the Stream of Consciousness" 2015.

<sup>41</sup> Chloe Brushwood, et al. 'Unexpected self-expression and the limits of narrative inquiry: exploring unconscious dynamics in a community-based digital storytelling workshop', *International Journal of Qualitative Studies in Education*. (2013) vol. 26, no. 2, pp. 216-37

<sup>42</sup> Mezirow. "Transformative Learning: Theory to Practice" 1997.bid.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> Schooler. "Minding the mind: the value of distinguishing among unconscious, conscious and metaconscious processes" 2015.

<sup>46</sup> Timothy Wilson, et al. "*Strangers to Ourselves: Discovering the Adaptive Unconscious*" (2002) USA: Harvard University Press.

<sup>47</sup> Timothy Wilson, et al. "Self-knowledge: Its Limits, Value, and Potential for Improvement" *Annual Review of Psychology* (2004) 55 (17):493-518.

religion while answering the online-survey; then, at the beginning of the interview, when those views were read loudly to her, she said first: *'(laugh) sounds so harsh! Well, it is pretty critical in that sense, like no religion at all!'* Later on she added: *'you realize by thinking that way, that you can be really narrow-minded yourself and I hate that'*; then, at the end of the interview, regarding the questionnaire she expressed: *'answering questions like these you do it more actively (referring to critically self-reflect), and you realize maybe I'm a bit extreme on this way, and I didn't think I was...I always say I'm so tolerant...but when I wrote that thing about religion it was pretty bound it was just stupid and I don't want to be like that'*.

Another specific moment of critical self-reflection emerged. This involved some participants comparing their own worldview with the other three available possibilities offered by the exercise and questioning how other participants perceived this experience. For example, 14I said: *'What people's worldviews are...it makes you think about other people's opinions about what's important as well'* and participant 28R shared: *'It was interesting to try and to think about what my worldview...how my worldview relates to someone who is religious?'*. Hence, being asked to self-recognize personal worldviews can make people question who they are, and who they are in comparison to others.

The answers provided to the follow-up questions sent months after the interview concluded, also show a beneficial outcome of experiencing critical self-reflection. For example, participant 26J expressed: *'...after our interview I have reflected quite a lot on what we shared...I have also, more generally, noticed my natural tendency to integrate different perspectives into a unifying perspective that makes the best sense of them'*. Participant 24R said: *'It would have been in the days and weeks afterwards...I have considered how my worldview has been formed and has shifted throughout my life, and will probably continue to shift'*. Participant 12J shared: *'I do appreciate more having an understanding for myself of why I have the worldview I do'*. Participant 11M answered: *'I do recall discussing the interview at length with my wife...(the interview) strengthened in my mind the belief that I am doing things in a correct and ethical way'*.

Critical self-reflection about components (i.e. perceptions) and expressions (i.e. behaviors) of a personal worldview, and about the overall experience of being asked to self-recognize a personal worldview, show that self-recognizing one's own worldview in a more detailed form has the potential to: 1) evoke multiple moments of critical self-reflection, the main component of a transformative learning experience (TLT phase three); 2) evoke the curiosity to compare one's own worldview with other types of worldviews (TLT phases four and five); 3) uncover meanings that could potentially help people to strength their own personal narratives (TLT phases four and five), a mental skill that can develop further over time. Therefore, being asked to self-recognize personal worldviews and how they manifest themselves in behavior open the possibility to recognize and reflect on uncritical underlying meanings; creating the inherent opportunity to change them or replace them with new meanings, which equates to a transformative learning experience.

## **5. THE LEARNING IMPLICATIONS FOR A WORLDVIEWS APPROACH**

Based on these empirical results and the theoretical TFWB, it is argued that transformative ESD could benefit from new learning foundations, based on positioning worldviews at the heart. A worldviews approach implies conceiving a worldview as the

enclosure of human potential, and learning as the key to unleash such potential. This approach implies using the self-recognition of worldviews as a tool, as a lens for understanding and self-understanding people's multiple responses to themselves, others and the world. Through this lens inherent opportunities for change may become visible. Such an approach would promote a better comprehension of how meanings are formed, transformed and acted out, implicitly allowing a better understanding of what shapes patterns of emotions, thoughts and actions people live through. Such an approach would aim to facilitate the self-recognition of how people sense and apprehend the world, and how they build the meanings that define their ways of being, becoming and behaving. Such an approach would be representing an inherent opportunity to explore and re-signify people's realities, helping to unpack and reframe unsustainable tendencies.

A worldviews approach to learning would encourage the comparison between what someone thinks her/his worldview is, and what nascent research tools (like the questionnaire) could suggest, or what other people may perceive from the outside about her/his worldview<sup>48</sup>. These forms of comparison would enable the emergence of possible contradictions by challenging ingrained and inadvertently uncritical meanings. In this study, comparing the self-nominated and the survey-assesed types of worldviews revealed that sometimes what/who people think they are could differ from what external sources capture and suggest. This could be challenging, but emotional responses would prompt critical self-reflection; resembling the first step in a transformative learning experience. It is important to emphasize that people experiencing these types of challenges may require an emotional support system, and proper follow-up<sup>49</sup>.

Based on the TLT, the volatile mental capacity to critically self-reflect is the crucial element allowing or constraining the exploration and creation of new meanings. Methods aiming to increase sustained consciousness and focused attention could encourage appropriate conditions for critical self-reflection and with this; they could facilitate the discovery of the depths of a worldview. Methods prompting critical self-reflection about a person's own perceptions, behaviors and the alignment in between will foster the investigation of the meanings shaping the way people are, implicitly encouraging the imagination and creation of alternative ways of being. Thus, a worldviews approach to learning would encourage critical self-reflection about participants' own personal worldview and potentially initiate the third phase of a transformative learning experience.

Critical self-reflection about perceptions and behaviors of a personal worldview can also evoke curiosity to compare one's own worldview with other types of worldviews, uncovering endless possibilities and unlimited potential for the creation of new ways of being, resembling phases four and five of a transformative experience.

In this study, the concept of worldview constituted the optimal vocabulary to represent the wholeness of the mental and behavioral complexity of humanness. It has helped to explore and self-explore how people apprehend and make sense of their own reality, form their unique structures of meaning, and live through them. Thus defined, a worldview is the foundation of people's identity, explaining their reality and prescribing

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<sup>48</sup> Wilson. "Self-knowledge: Its Limits, Value, and Potential for Improvement" (2004)

<sup>49</sup> Rebecca Cheney. 'Empirical Measurement of Perspective Transformation, 1999-2009.', paper presented to the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education., Michigan State University, (2010) September 26-28.

their patterns of emotions, thoughts and behaviors<sup>50 51</sup>. Questioning the meaning of the human experience and exploring new ways of being, becoming and behaving, as transformative ESD aims, may commence with the self-recognition of own personal worldview. For most people, just recognizing the deepest meanings they operate out of, in full awareness that these meanings may not be serving their deepest intentions or may not be aligned with or expressed by current behaviors, is enough to make a powerful shift<sup>52</sup>.

There are implications for how learning is viewed when taking a worldviews approach. Learning would be conceived as the combination of physical, mental, individual and social processes occurring simultaneously and converging in each life experience<sup>53 54 55</sup>. Learning would be considered as the mental process where the mind (personal worldview) enters an environmental (mostly social) situation and mirrors such an experience<sup>56</sup>. This mental mirroring is then transformed through affective, cognitive and behavioral processes, and its ultimate meaning is integrated into the person's biography (personal narrative), as the driving force behind the continuity of being, becoming and behaving. In a worldviews approach to learning, human learning would be conceived as the main vehicle behind the formation, evolution, transformation and expression of worldviews.

Learning how a personal worldview is formed and expressed entitles potential benefits. Learning about its formation would be equivalent to reflecting on how information is processed to build unique arrangements of meaning; with the inherent opportunity to explore and create new forms of significance, new conceptualizations that generate possibility for more sustainable ways of being. Learning how a worldview is expressed would be equivalent to reflecting on mental states, attitudes, choices and behaviors, which are the mental layers through which a worldview unfolds (as explained by the TFWB). This could open possibilities to explore how to be fully aware of the dominant emotions and thoughts provoked by a given experience, facilitating a switch between mental states, and leading to the exploration of new attitudes resulting in different behavioral choices<sup>57 58 59</sup>. Learning how the body builds the mind, how the mind builds meaning, and how meaning is expressed, could provide increasing opportunities to build and express different ways of being.

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<sup>50</sup> Michael Hand. "What's in a worldview? On Trevor Cooling's Doing God in education" *Oxford Review of Education* (2012) 38 (5):527-537.

<sup>51</sup> Kathryn Johnson, et al. "Integrating the Study of Culture and Religion: Toward a Psychology of Worldview" *Social and Personality Psychology Compass* (2011) 5 (3):137-152.

<sup>52</sup> Hedlund-de Witt. "A new tool to map the major worldviews in the Netherlands and USA, and explore how they relate to climate change" (2016).

<sup>53</sup> Siegel. "Mind, brain and relationships: The Interpersonal Neurobiology Perspective" 2016.

<sup>54</sup> De la Sierra. "Worldviews, A Mental Construct Hiding the Potential of Human Behaviour: A New Learning Framework to Guide Education for Sustainable Development" 2017.

<sup>55</sup> Peter Jarvis. "Towards a philosophy of human learning: an existentialist perspective" *Human learning: a holistic approach*. (2005) 1-15. NY, USA: Routledge.

<sup>56</sup> Ibid

<sup>57</sup> Wendy Hasenkamp, et al. "Mind wandering and attention during focused meditation: A fine-grained temporal analysis of fluctuating cognitive states" *NeuroImage* 59 (2012):750-760.

<sup>58</sup> David Kolb, et al. *Mindfulness and Experiential Learning* (2009). *Od Practitioner* 41:3.

<sup>59</sup> Schooler. "Minding the mind: the value of distinguishing among unconscious, conscious and metaconscious processes" 2015.

## 6. CONCLUSIONS

This research focused on the sophistication of the human mind and how it determines the interactions within oneself, with other individuals, and with the environment in general. This research used the concept of worldviews to explore the essential aspects of these complex interactions, identifying them as the mental enclosure of the human potential, the origin of our human ways of being, becoming and behaving.

This paper presented empirical research that explored the learning implications of self-recognizing one's own worldview. A worldviews approach to learning could safely guide the challenging of uncritical meanings ingrained in one's own identity, prompting critical self-reflection about one's own perceptions and behaviors, opening the inherent possibility to explore, change and create new meanings. Recognizing, changing, transforming and creating meanings would implicitly result in different patterns of emotion, thought and behavior.

The transformative ESD of today is shifting away from the modern views on education. The priority is no longer to produce human capital for unlimited progress, well-behaved citizens and good workers, as has been proclaimed since the 18th century<sup>60 61</sup>. One of the greatest challenges humanity is facing today is to operate within the capacity and boundaries of all Earth's natural systems, which implies a profound reassessment of the modern meanings given to the human existence. The research presented here provides a glimpse of a new transdisciplinary learning approach that leverages the hidden power of worldviews to help reassess and recreate these modern meanings.

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<sup>60</sup> Alan Krueger, et al. "Education for Growth: Why and For Whom?" *Journal of Economic Literature* 39 (2001):1101-1136.

<sup>61</sup> Evan Schofer, et al. "The Worldwide Expansion of Higher Education in the Twentieth Century" *American Sociological Review* (2005) 70 (6):898-920.

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