

VALIDITY AND RELIABILITY ASSESSMENT OF THE TRANSFORMATIVE LEARNING OUTCOMES AND PROCESSES (TROPOS) SURVEY IN PUBLIC SECTOR WORK-RELATED LEARNING

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Abstract

As corporate contexts and business environments become increasingly complex, Transformative Learning (TL) in workplace research is gaining prominence. This type of learning can shift perspectives, leading to psychological, convictional, and behavioural changes, as described by Clark's (1991) adaptation of Mezirow's theory of transformation (1978). The Transformative Outcomes and Processes Survey (TROPOS), developed by Robert Cox (2017), is a reliable tool for measuring TL, featuring four subscales: Social Support, Attitude toward Uncertainty, Criticality, and Transformative Outcomes. This study assesses the validity and reliability of the 30-item TROPOS instrument in workplace learning using a quantitative, questionnaire-based approach. Convenience sampling was employed, targeting accessible respondents from 238 employees of the Public Employment Services in Greece. Results from confirmatory factor analysis and Cronbach's alpha confirm the instrument's applicability to workplace learning. The study validates TROPOS as a useful tool for evaluating TL outside educational settings and extends the understanding of TL in work-related contexts. The implications and constraints of TL research are discussed, contributing to the literature and practice in this field.

Keywords: transformative learning, workplace learning, human resources development, public sector, validity and reliability

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1. INTRODUCTION

Transformative learning (TL) can help individuals and organizations change, adapt and confront complexity and volatility. It can shift an organization from within (leadership style and vision, structure and processes, culture oriented towards learning, appraisal and reward systems) as well as each employee individually to challenge frames of reference, defy existing norms and revisit assumptions and constraints over their work life and role (Ntalakos et al., 2022; Faller & Marsick, 2023;). Individual transformations can lead to collective organizational transformations, so long as the learning is systematic and integrated. Human Resources can be driven towards transformative frameworks and schemes via internal or external stimuli and factors (Belias & Trihas, 2022a). Yorks, Abel and Rotatori (2022), for instance, suggest that the role of the Human Resources Development (HRD) should be crucial in formulating disorienting dilemmas and presenting them to their workforce, as a way of preparing them to foster a process, before any competitor or the market actually does (Belias & Trihas, 2022b). Stepping out of their comfort zone, embark on interactive discourse and exhibiting critical reflection is another suggestion made by Eoyang (2022); supporting peer learning through inquiries and experiences is a way of discomfort, revision and receipt of new insights from colleagues. Transformative learning is part of life-long learning. This kind of learning can be intentional, en passant or incidental. Engaging in learning is a way to improve one's life quality and achieve personal and professional fulfilment. However, it is not only a matter of learning, but also of unlearning and relearning that fosters

growth, contentment, and evolution (Islam, 2021).

Practicality shows that adapting transformative learning in one's training provides bases for self-awareness and self-actualization (Viterouli et al., 2021); it increases employee satisfaction and engagement and promotes efficiency in performance (Cox, 2017; Walker, 2018; Brock, 2010; Papademetriou, 2025). To date, the evidence that supported these claims have been mainly qualitative in nature (Stuckey et al., 2022; Pang et al., 2023). For this reason, we have undertaken a new quantitative instrument under scrutiny, the Transformative Outcomes and Processes Survey (TROPOS) instrument and examined it in terms of cultural context, validity and reliability. The aim of this study is to test the instrument concerning its effect on the quality and quantity of performance in the Public Employment Services (PES) in Greece through a mail out survey of 238 employees. Each PES offers services to both the unemployed and the employers and is mainly responsible for unemployment benefits, counselling services to the unemployed and work supply and demand matching. It is important to understand if transformative processes have taken place within workplace, what the employees understanding of the matter is, how they can be aided to evolve, and if there are any transformative outcomes. The article describes the examination of the transformative learning literature, the respective measurement instruments, the characteristics of TROPOS, and then proceeds with the assessment where it is proven that it is actually an instrument that can be efficiently used in a workplace environment.

2. LITERATURE REVIEW

2.1. Potentiality of transformation

Transformative Learning Theory (TL) is one of the pillars of Adult Education. Its roots and origin lie within the instillation of Mezirow's (1978) lessons learnt. Jack Mezirow is widely acknowledged as the founder of the notion and concept of transformative learning. In his work, Mezirow identified ten steps (table 1) that contributed to transformative learning process (2000), even if – as he stated – not all steps are required to experience transformative learning. He emphasized the importance disorienting dilemmas play in making an individual embark on a transformative process, since they create discontent and uncertainty, and lead to critical reflections so as to overcome burdens and bottlenecks. Following, formation of new assumptions is necessitated and consecutively tested conceptually and practically. This rationalization of the next moves and the evaluation of the impacts take place within a context of discourse

(dialectics), where viewpoints are shared, negotiated, compared, scrutinized and, if needed, altered. People confront biases, fears and reservations, and choose, directly or indirectly, to transform their standpoints and perspectives (worldviews) (Ntalakos et al., 2025a).

In 2014, Norma Nerstrom, identifying complexities in Mezirow's sequential ten-phase process and narrowed it down to 4 stages/segments (figure 1) where entry can

Table 1. Mezirow's 10-phase Model (1978, 2000)

Phase	Attributes
1 st	A disorienting dilemma
2 nd	Self-examination of assumptions (mostly underpinned by feelings of guilt or shame)
3 rd	Critical reflection on cognitive, psychological and sociocultural assumptions – via discourse
4 th	Recognition of shared experiences and of one's own discomfort
5 th	Exploration of alternatives for new behaviour, i.e. roles, relationships, and actions
6 th	Planning of a course of action
7 th	Acquisition of new knowledge, skills and capabilities for one's plans implementation
8 th	Experimentation with new roles
9 th	Competence and self-confidence building
10 th	Reintegration of new perspectives and schemata into one's life

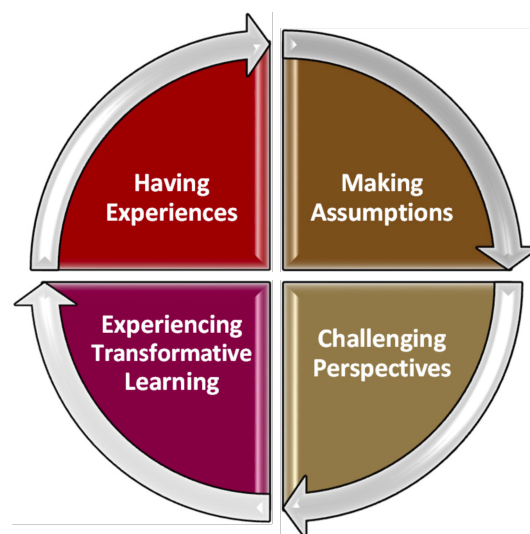


Figure 1. Nerstrom Transformative Learning Model (2014)

begin at any stage, contrary to the former. Her model identifies transformative learning as a continuous cycle of learning and involves five major themes: (a) “examined prejudices - biases, stereotypes, and learned beliefs; (b) incidental experiences, with subthemes of increased self-confidence, renewed personal values, cultivated social involvement, and lasting friendships; (c) program structure fostering transformative learning, with subthemes of cohort and residential learning and traditional learning models; (d) re-conceptualization of learning; and (e) transformed personhood” (Nerstrom, 2014, p. 328).

Preceding and succeeding Nerstrom, a lot of theorists and practitioners have criticised, altered, enriched and further developed Mezirow’s original and foundational work on TL. For example, Cranton (2006), Merriam (2004) and Newman (2012) claimed that discourse is not inextricable in TL, since it can occur without it. Clark (1991) spoke of three dimensions in transformational learning: psychological (changes in understanding of the self), convictional (revision of belief systems), and behavioral (changes in lifestyle). Dirkx (1997) did not confront TL as an objectively defined process, but rather as a subjective one, underpinned by emotions, feelings and the unconsciousness. Tennant and Pogson (1995) saw no direct connection of the 10-phase process to change one’s frame of reference and attributed it to the progression of development of one’s life cycle. Likewise, Taylor and Snyder (2012) stated that the order and the interrelationships of Mezirow’s model factors are questionable and spoke of ‘other ways of knowing’, especially of emotional literacy and multiple intelligences. Tisdell (2012) along with Cranton (2006) saw TL not only as a

cognitive experience, but as a conglomeration of cognitive, imaginative, psychological/affective, spiritual or physical stimuli; an extra-rational process. Hoggan (2016) claimed that Mezirow’s theory could be better described as ‘perspective transformation’ due to its limited range of conceptualization and recognized four approaches to TL theory, i.e. psycho-critical, psycho-developmental, psychoanalytic and social emancipatory. Therefore, a lot has been added in the concept of TL since its dawning. No matter the differences in approaches (Schapiro et al., 2017), transformative learning, in its evolved or formative state, shifts minds away from rote learning, challenges existing schemata, instils readdressing of oneself and his/her surroundings, and rediscovering of one’s role in life.

2.2. Existing Instruments

Most studies on the effects of transformative learning have been conducted via qualitative methods (Cox, 2017; Romano, 2018; Walker, 2018), such as interviews, focus groups and observation. The aim was to understand people's beliefs, experiences, attitudes, behaviour, and interactions, as much as possible, but since non-numerical data were generated, the impact or outcome could not be (objectively) measured, identified or substantiated (Brock, 2010). Therefore, development of measurable tools for evaluation and prediction was deemed a necessity. In 1997, King constructed a qualitative in nature questionnaire, but went on to refine it in 2009 naming it, the ‘Learning Activity Survey’ (LAS), and designing it to quantitatively evaluate perspectives of transformations (King, 2009). The

instrument consists of four parts: identification of perspective transformation (PL) stages; determination of the learning experiences that have facilitated and promoted PL; determination of the learners' engagement in each learning activity; and collection of purposeful socio-demographic characteristics. However, King seems as failing to report reliability, and instrument validity is not adequately addressed (Taylor and Snyder, 2012).

Kember et al. (2000) designed a 16-question, four-scale questionnaire that measured: habitual action, understanding, reflection and critical reflection and aimed to quantitatively address critical thinking. The 'Critical Reflection Questionnaire' (CRQ), assesses if, how and to what extent students engage in critical reflection during professional preparation courses, but lacks in grasping the wholeness of transformative learning concept. In 2013, Stuckey, Taylor and Cranton developed and validated a 92-item survey. The 'Transformative Learning Survey' (TLS) includes four TL outcomes measures, i.e. acting differently, deeper self-awareness, holding more open-minded perspectives, experiencing a profound shift in worldview, and fourteen transformative learning process measures in three domains, i.e. rational/cognitive, extra-rational, and social/emancipator (social critique). However, even if their instrument is presented as a quantitative survey, in the beginning it uses qualitative approaches; therefore, the quantification of results is questionable. Additionally, even if it most certainly adds to the exploration and elaboration of the transformative learning theory, it fails to, holistically and explicitly, address the reliability and validity results of the pilot study's revisions, yet efforts have been made, recently, to extend the

instrument's development (Stuckey et al., 2022).

David Cox (2017) tried to answer 'how transformative learning occurs' and to address challenges such as the processes, the domains/contexts, and the scope of measurement involved in order to operationalize the theory and formulate a psychometric instrument that testifies exactly that, the 'Transformative Learning Outcomes and Processes Survey (TROPOS). Cox drew on King's (2009) and Stuckey's et al. (2013) research and aimed to extend it by identifying general learner characteristics that underpin Transformative Learning (TL). More recently, Walker (2018) presented a new transformative learning survey instrument consisting of 52 items, the 'Transformative Learning Environments Survey' (TLES). His instrument uses a three-stage approach and four scales: 1. Disorienting Dilemma, 2. Self-Reflection (of cultural and psychological assumptions), 3. Meaning Perspective and Critical Discourse, and 4. Acting (internally motivated behaviour). His main aim was to prove whether frames of reference in a classroom environment are affected and/or changed by higher education instructors, considering both 'apperception (self-cognition) and perception of the classroom environment (Walker, 2018).

3. METHODOLOGY

3.1. Population and sampling

The present study aiming to assess learning processes in the workplace context, operationalized TROPOS for data collection to evaluate transformative learning potentiality. Thus, the most accessible and

appropriate employees were chosen from the online database of DYPA to serve as respondents to our survey. Undertaking convenience sampling was a choice based on the suitability, cost and time efficacy respective to our research. E-questionnaires, using Google forms, were sent out via email to the employees of the Public Employment Services (PESs) all over Greece, addressing all working professionals, since regardless of their socio-demographic characteristics, as depicted in table 2, they are all part of the beneficiary's service experience. Data collection was carried out between November and December 2022. 238 e-questionnaires were returned, with no missing values (valid sample: $n=238$), since answering every single question was obligatory by default.

More than half of the respondents (66,39%) were female, with the rest being male. In the age category, 23.11% of the employees were between the ages of 41 and 45, with the next higher percentages being 18.91% and 17.65% for the ages 51-55 and 46-50 respectively, showing that the majority of the workforce was at their most productive, active and 'knowledge/wisdom-related' age, while only 2.94% were aged 60 or above. It is worth noting that we witness an 'active multigenerational workforce, consisting of four existing generations: a) Baby boomers; b) Generation Xers; c) Generation Y or the Millennials; and d) Generation Z or the Post-Millennials, whose different or similar technological, political, economic, social and environmental traits underpin their formative and developmental years (Viterouli et al., 2022). As far as their marital status is concerned, the lion's share is married with children (56.30%). In terms of academic qualifications, more than two thirds of the respondents (70.17%) have an

undergraduate degree. Generally, most of our respondents were from Attica (34.03%), and permanent civil servants (87.82%).

3.2. The instrument of research

TROPOS was constructed as a holistic, unified psychometric framework that can assess transformative learning within any context. Most research instruments have been constructed and developed for the field of education. Contrarily, TROPOS considers the essence and role of transformative learning in the context of (learning) organizations too. Due to the complexity of transformative learning theory and its unique nature four process themes (subscales) were conceived by Cox (2017), who used 30 items to operationalize this theory: (1) Social Support (SS), which is conceptualized as a learner's constructive engagement with a social group whose members exhibit mutual trust and respect, thereby facilitating a balance between support and constructive critique. Social support can either inhibit or promote transformative learning. (2) Attitude toward Uncertainty (AU), which shows one's attitude toward uncertainty within transformative learning, i.e. how one reacts when he 'leaves' his comfort zone and experiences a loss of certainty. (3) Criticality (CI), which represents a learner's questioning beliefs of oneself and others, evaluating the validity of such beliefs, and re-framing these beliefs. (4) Transformative Outcomes (TO), which show a learner's profound reassessment of beliefs, typified by changed assumptions and a more inclusive, open perspective toward self and others. Transformative outcomes represent a reconstructive process led by the individual learner who seeks to develop a more comprehensive, consistent, and open view of

the world and of self. TROPOS utilizes a 5-point Likert scale for all question items (Disagree Strongly, Disagree, Neutral, Agree, Agree Strongly) and is intended to be a modular and expandable framework for the assessment of Transformative Learning (TL), and has come in response to challenges that demanded the development of a quantitative measure to assess various transformative learning processes and outcomes (Kwon et al., 2021). Nevertheless, since it was originally developed in and with reference to the educational context, as with any instrument, socio-cultural compatibility and meaning-making in the workplace context should be assessed in order prove that its validity and reliability are intact in a different setting.

3.3. Assessment of Candidate Models, Procedures and Results

In order to proceed with the assessment, written approval to use the instrument was obtained by its creator, along with permission for the development of a new language version (Greek). It was specifically aimed that the translation captured conceptual meaning of the items according to cultural interpretation within the framework of 'back-to-back translation'. Approval for data collection from the PESs by the Governor of DYPA (the Central Administration of the PES Network) was also granted. In assessing the above measurement model for our sample and culture, and evaluating its Greek translation and administration to the PES employees, we have proceeded with the evaluation of concurrent and content validity, of reliability and of construct validity (Banville et al., 2000), treating items as categorical data to validate the scales, since our data was not

normally distributed. Cronbach's Alpha coefficient (reliability) was used in order to measure the internal consistency of each variable. Descriptive statistics were also used, such as statistical means and standard deviations or residual variances for each item, along with confirmatory factor analysis (CFA). All CFA estimates, including factor loadings and residual variances, were calculated using robust maximum likelihood estimation with a 95% confidence interval.

Even if Cronbach's Alpha can be characterized as good or even excellent (0.7-0.9) in all factors (Table 4), nevertheless, the items factor loadings do not give us satisfactory or adequate results. We notice that we have values below 0.4, which cannot be considered acceptable or be retained (Table 3). Likewise, some items provided us with high residual variance, indicating that the variation in the data, cannot be explained by the variables in the model. Therefore, we have decided to remove the following questions: Q54, Q58, Q59, Q66 due to low factor loadings (< 0.4), and Q50, Q60, Q65 due to low factor loadings (< 0.4), and also due to high variance values (> 0.8). Thus, the 2nd model is respectively formulated (Table 5).

A slight increase in the Cronbach's alphas is noticed, speaking of mainly excellent internal consistency. We also notice a slight increase in the standard deviation which indicates that data are a bit more spread out, and not strongly clustered around the mean. Yet, the value is so small (> 1) that it does not affect centralization.

Furthermore, comparative model fit indices (Table 5) indicate an overall improvement in the revised measurement model. The second model (23 items) showed a notable reduction in the chi-square statistic (approximately 50% lower), suggesting a

Table 2. Loadings and Item Variances of 1st model

Factor	Item	Factor Loading	Residual Variance
Social Support (SS)	*Q50. My fellow students often made an effort to understand my perspective.	0.333	0.875
	Q51. I usually felt safe sharing my opinions.	0.685	0.308
	Q52. I could raise questions about my fellow students' beliefs without fear of being shut out.	0.646	0.414
	Q53. My fellow students and I supported one another.	0.574	0.382
	*Q54. Group discussions were usually inclusive of differing perspectives.	0.373	0.729
	Q55. I trusted my fellow students.	0.609	0.328
	Q56. My fellow students and I respected one another.	0.473	0.519
	Q57. I felt it was safe to participate in the group as my authentic self.	0.550	0.478
Attitude Toward Uncertainty (AU)	*Q58. I felt comfortable suspending my judgment.	0.314	0.823
	*Q59. I was open to new possibilities.	0.302	0.782
	*Q60. I often felt hesitant in what I believed to be true.	0.194	0.957
	Q61. I benefited from suspending my judgment.	0.531	0.536
	Q62. I often felt surprised by what I learned.	0.625	0.541
	Q63. I found discomfort could be an important part of learning.	0.392	0.803
	Q64. I found stepping outside my comfort zone helped me learn.	0.624	0.517
	*Q65. I often felt uncertain about my beliefs.	0.293	0.892
Criticality (CI)	*Q66. I was willing to explore ideas I disagreed with.	0.214	0.893
	Q67. I discovered contradictions in my beliefs.	0.512	0.695
	Q68. I challenged my own beliefs.	0.618	0.528
	Q69. I challenged my fellow students' beliefs.	0.464	0.745
	Q70. My fellow students raised questions about my beliefs.	0.634	0.567
	Q71. I explored new ways to think about my beliefs.	0.565	0.562
	Q72. Disagreements helped me understand my beliefs.	0.590	0.599
Transformative Outcomes (TO)	Q73. My deeply held beliefs changed.	0.629	0.539
	Q74. I developed a greater sense of responsibility toward others.	0.573	0.634
	Q75. I changed my goals for the future.	0.653	0.489
	Q76. I made major changes in my life.	0.873	0.274
	Q77. My view of myself changed.	0.886	0.277
	Q78. My view of the world changed.	0.935	0.291
	Q79. This program changed my life.	0.828	0.334

* Items discarded following CFA and Internal Consistency Measurement

Source: Cox (2017) ("students" was substituted by "co-participants" in the given questionnaire)

Table 3. Internal consistency of the 1st model items

Factor	Item	Cronbach's Alpha	Average (Scale 1-5)	Standard Deviation
SS	Q50, Q51, Q52, Q53, Q54, Q55, Q56, Q57	0.87	3.6	0.57
AU	Q58, Q59, 60R, Q61, Q62, Q63, Q64, Q65	0.7	3.1	0.48
CI	Q66, Q67, Q68, Q69, Q70, Q71, Q72	0.78	2.6	0.58
TO	Q73, Q74, Q75, Q76, Q77, Q78, Q79	0.91	2.3	0.8

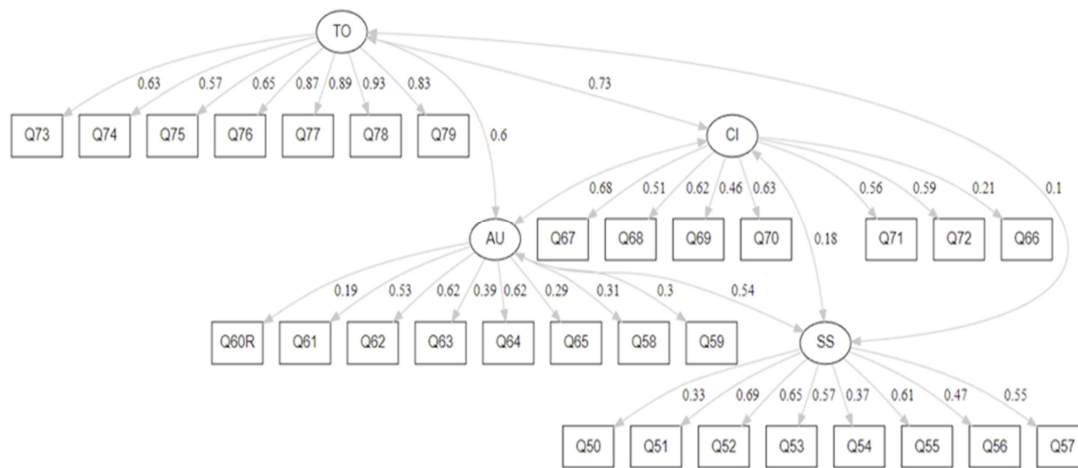


Figure 2. Measurement Model (1st Model)

Table 4. Cronbach's Alpha & Descriptive Statistics (2nd - Final Model)

Factor	Item	Cronbach's Alpha	Average (Likert Scale 1-5)	Standard Deviation
SS	Q51, Q52, Q53, Q55, Q56, Q57	0.90	3.7	0.62
AU	Q61, Q62, Q63, Q64	0.73	3.1	0.65
CI	Q67, Q68, Q69, Q70, Q71, Q72	0.79	2.4	0.64
TO	Q73, Q74, Q75, Q76, Q77, Q78, Q79	0.91	2.3	0.80

Table 5. Confirmatory factor analysis of both candidate models

	Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA
1 st	4 Factors	1,353,935	399	3,393	0,740	0,716	0,100
	30 Variables						
2 nd	4 Factors	733,649	224	3,275	0,830	0,808	0,098
	23 Variables						

better alignment between observed and expected values. In addition, the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) both increased in the second model, further supporting enhanced model fit. While the RMSEA value remained close to the 0.10 threshold in both models, the slight reduction observed in the second model reflects a modest improvement. These indicators collectively support the decision to retain the refined model as a better representation of the factor structure in the current context. Following the item

refinement process, we retained certain items (e.g., Q63, Q67, Q69) despite their lower factor loadings, due to their theoretical relevance and contribution to inter-factor relationships (Table 6). For example, Q63 ("I found discomfort could be an important part of learning") showed a loading slightly below the 0.4 threshold but reflects a core component of the Attitude Toward Uncertainty dimension. Similarly, Q69, while initially low-loading, is conceptually aligned with the Criticality construct and demonstrated improved performance in the

refined model. Retaining these items allowed us to preserve structural balance and maintain meaningful correlations between factors. As noted by Cox (2021), overly aggressive item removal can weaken the

theoretical integrity of the instrument. Nonetheless, we recognize the potential for contextual adaptation of these items in future applications, especially to better align with workplace-based learning environments.

Table 6. Internal Consistency-Aggregated Results of the Final Model of TROPOS

Factor	Item	Average (Likert Scale 1-5)	Standard Deviation	Factor Loading	Variances
SS	Q51	3.60	0.83	0.839	0.296
	Q52	3.50	0.85	0.770	0.408
	Q53	3.60	0.73	0.785	0.385
	Q55	3.60	0.74	0.821	0.326
	Q56	4.00	0.68	0.689	0.525
	Q57	3.80	0.76	0.717	0.485
AU	Q61	3.30	0.78	0.650	0.578
	Q62	2.90	0.92	0.696	0.516
	Q63	2.90	0.88	0.495	0.755
	Q64	3.30	0.90	0.723	0.477
CI	Q67	2.30	0.93	0.556	0.691
	Q68	1.90	0.90	0.706	0.502
	Q69	2.40	0.92	0.520	0.729
	Q70	2.00	0.97	0.671	0.550
	Q71	2.80	0.85	0.641	0.589
	Q72	3.00	0.93	0.623	0.612
TO	Q73	2.10	0.93	0.678	0.541
	Q74	3.10	0.95	0.605	0.634
	Q75	2.90	0.91	0.714	0.491
	Q76	2.30	1.03	0.851	0.276
	Q77	1.90	1.04	0.851	0.275
	Q78	2.10	1.11	0.844	0.288
	Q79	1.90	1.02	0.816	0.335

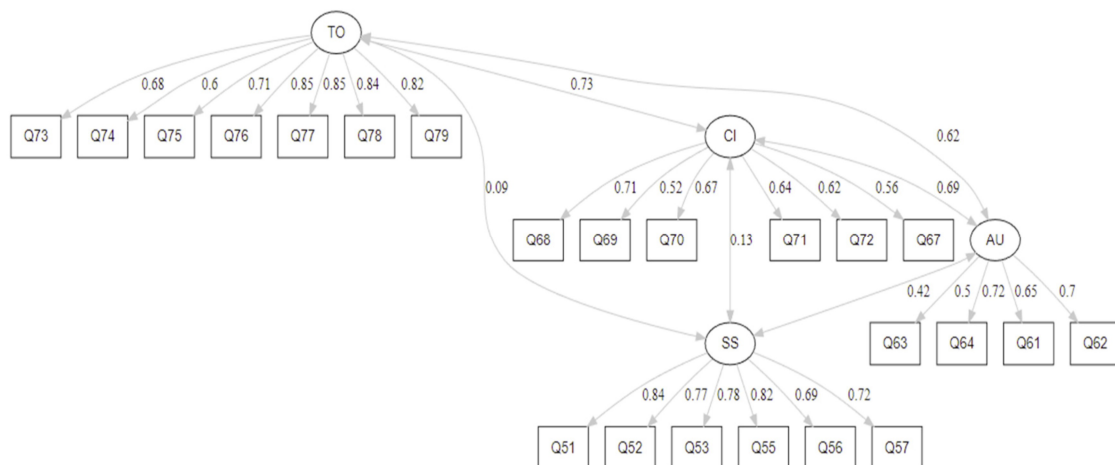


Figure 3. Conclusive Model (2nd Model)

4. DISCUSSION

As the breadth and depth of contemporary transformative learning assessment has been expanding, efforts are being made by researchers and theorists to utilize qualitative, quantitative or even hybrid, mixed methods to further develop the Transformative Learning (TL) theory and evaluate its processes and outcomes. The current instrument, TROPOS, encompasses and encapsulates different angles in addressing the phenomenon of this type of learning, assesses its constructs and examines the way(s) it unfolds. Being based on the rational, discursive phase-based linear Mezirowan theory of transformative learning, but also on non-linear, recursive processes, driven by extra-rational, intuitive stimuli, a one-dimensional instrument has been developed that addresses both epochal and incremental transformations. Cox (2017, 2021) conceptualized Transformative Learning (TL) as a mainly prospective process focusing on general features rather than specific domains that narrow down application, usefulness and experience of the instrument and the principles it underpins. All in all, TROPOS entails significant and meaningful relationships between transformative learning processes and outcomes and justifies use in the public sector workplace context too, among others.

While all four TROPOS constructs showed acceptable internal consistency and satisfactory model fit, the Transformative Outcomes (TO) factor yielded notably lower mean scores ($M = 2.3$) compared to Social Support (SS: $M = 3.7$), Attitude Toward Uncertainty (AU: $M = 3.1$), and Criticality (CI: $M = 2.4$). This contrast suggests that although employees in our sample reported moderate engagement in reflective dialogue,

emotional openness, and critical questioning, they were less likely to indicate that these processes resulted in significant personal transformation (e.g., changes in worldview, goals, or identity) (Belias et al., 2024a; Ntalakos et al., 2025b). This finding aligns with the theoretical understanding that transformative outcomes are not guaranteed, but rather represent the most advanced and rare form of adult learning (Singh & Chakraborty, 2024; Viterouli et al., 2025). In public sector settings where learning is often compliance-driven, task-specific, or procedural, deep personal change may be less frequent or take longer to manifest (Corcione & Jovanović, 2025). Moreover, the retrospective self-report nature of the survey and the timing of data collection shortly after learning experiences may have limited participants' awareness or articulation of such outcomes. These factors collectively explain why Transformative Outcomes (TO) received lower scores despite overall engagement in transformative processes.

The validation of the TROPOS instrument in a workplace context offers more than psychometric evidence; it pinpoints the relevance of transformative learning processes in driving broader organizational outcomes. Employees who report high levels of critical reflection, openness to uncertainty, and transformative outcomes may also be more likely to demonstrate adaptive behaviours, increased engagement, and a willingness to revise entrenched mindsets (Belias et al., 2024a; Ntalakos et al., 2025b). These qualities support productivity, retention, and collaborative workplace culture, particularly in sectors undergoing rapid or complex change, such as the public sector. For instance, in the context of Greek Public Employment Services (PES), staff

engaged in cross-agency retraining or citizen-centred service innovation often face unpredictable policy shifts and evolving administrative procedures. In such cases, high levels of transformative learning capacity (as measured by TROPOS) can reflect an employee's ability to navigate uncertainty, challenge outdated routines, and co-create improved workflows with colleagues and stakeholders (Papademetriou et al., 2025). Similarly, organizations may use TROPOS results to inform targeted learning interventions, such as workshops on reflective practice, or to assess the impact of change management strategies on workforce adaptability. Accordingly, the TROPOS dimensions serve not only as diagnostic indicators of individual learning, but also as practical tools for evaluating an organization's readiness for innovation and sustainable development.

5. PRACTICAL IMPLICATIONS AND LIMITATIONS

After examining the factor structure, reliability, and validity of the TROPOS instrument in the Greek PES work environment, the present study finds that its application can help practitioners and researchers assess, understand, and improve workplace learning environments. Nevertheless, our analysis suggests that certain items may need to be revised or re-examined in future studies or applied to different groups of employees (Belias & Koustelios, 2014). Although all core factors were retained, seven items were removed; a result that could be attributed to several causes, including the sampling method, the relatively small sample size, socio-cultural variability, the specific nature of work at the

PES, or individual biases and experiences of the participants. Administering the instrument in other sectors, employee groups, and national contexts, and with larger, more representative samples, will help further define its psychometric properties and cross-contextual robustness.

Moreover, although convenience sampling was acknowledged as a limitation, its implications warrant further reflection. The use of non-probability sampling limits the generalizability of the findings beyond the specific group of PES employees surveyed. Participants who opted to respond may have been more engaged in learning activities or more open to reflective processes, potentially introducing self-selection bias. This could result in an overrepresentation of transformative learning experiences and an underrepresentation of those who experienced little or no change. Additionally, potential differences across regional PES structures or access to learning opportunities may not have been fully captured. Future studies employing stratified or randomized sampling methods across both public and private sector organizations would contribute to more robust, generalizable insights.

6. CONCLUSION

Instruments, by nature, are meant to be enriched or refined either practically, i.e. applied to various populations in different domains and environments or contextually, i.e. modified in dimensions or items so as to be appropriate and applicable in a variety of circumstances and conditions and align better with Transformative Learning (TL) theory. After all, quantitative measures interrelate with the principle of

generalization of results across and within populations and settings. Yet, the current survey provides us with insights, regardless of the extracted items of the transformative learning process and outcomes, since its ability to assess employees' direct learning procedures and outcomes is robust and so is its facilitation for indirect employee evaluation by leaders. Additionally, all factors remain intact, they complement each other, and their associations and correlations have been proven strong, clarifying, at least for the most part, what Transformative Learning (TL) is. After all, the ultimate interest of transformative learners is to experience a profound, long-lasting impact on their life and acquire an open and discerning worldview.

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ПРОЦЕНА ВАЛИДНОСТИ И ПОУЗДАНОСТИ УПИТНИКА О ТРАНСФОРМАТИВНИМ ИСХОДИМА УЧЕЊА И ПРОЦЕСИМА (TROPOS) У КОНТЕКСТУ УЧЕЊА ПОВЕЗАНОГ СА РАДОМ У ЈАВНОМ СЕКТОРУ

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Извод

Како корпоративни контексти и пословна окружења постају све сложенија, трансформативно учење (Transformative Learning – TL) у истраживањима учења на радном месту добија све већи значај. Овај тип учења може довести до промене перспектива, што резултира психолошким, уверењским и понашајним променама, у складу са адаптацијом Мезирове теорије трансформације (Mezirow, 1978) коју је предложио Кларк (Clark, 1991). Упитник о трансформативним исходима и процесима (Transformative Outcomes and Processes Survey – TROPOS), који је развио Роберт Кокс (Robert Cox, 2017), представља поуздан инструмент за мерење трансформативног учења и обухвата четири подтест скале: друштвену подршку, став према неизвесности, критичност и трансформативне исходе. Ово истраживање процењује валидност и поузданост TROPOS инструмента од 30 ставки у контексту учења на радном месту, користећи квантитативни приступ заснован на анкетирању. Примењено је пригодно узорковање, усмерено на доступне испитанике из узорка од 238 запослених у Јавној служби запошљавања Грчке. Резултати конфирматорне факторске анализе и Кронбаховог алфа коефицијента потврђују применљивост овог инструмента у истраживању учења на радном месту. Студија потврђује да је TROPOS користан инструмент за процену трансформативног учења ван образовних окружења и доприноси бољем разумевању овог концепта у контекстима повезаним са радом. У раду се разматрају и импликације и ограничења истраживања трансформативног учења, чиме се доприноси теорији и пракси у овој области.

Кључне речи: трансформативно учење, учење на радном месту, развој људских ресурса, јавни сектор, валидност и поузданост

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