The integrated framework of GEMMA project: Increasing well-being in researchers through digital, life and entrepreneurial competences

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THE INTEGRATED FRAMEWORK OF GEMMA PROJECT: INCREASING WELL-BEING IN RESEARCHERS THROUGH DIGITAL, LIFE AND ENTREPRENEURIAL COMPETENCES

The main goal of this document is to develop an integrated model for well-being for researchers including three main competences: Entrepreneurial skills; Digital Skills; and Life Skills. The final model will define a training approach targeted for academic teaching (from PhD Students to Full Professors) and research staff with the aim of strengthening well-being and an informed balance of work/personal life by specifying: the specific objectives of the GEMMA training approach, the skills to be taught, the needs of the researchers about the balance between work and personal life, and the pedagogical approaches and strategies to be employed.

To do so, the following sections will be reviewed: (1) the definition of the most relevant models of well-being; (2) the models of well-being that have been applied to the workplace context; (3) the competences involved in well-being in the workplace, considering digital competences, life skills, and entrepreneurship skills; (4) the different intervention programs for well-being that have been developed in the workplace; and (5) the needs of researchers in the workplace, considering the results of focus groups conducted at different universities. Finally, we will analyze potential future directions, considering the promotion of different competences and well-being in the workplace.

1. Introduction: The importance of considering well-being in the workplace

In 1948, the World Health Organization (WHO) emphasized that both health and mental health do not merely involve the absence of illness or mental problems, but include complete physical, mental, and social well-being (Cieza et al., 2016). This means that in order to promote mental health, we must not only mitigate the negative aspects, but also promote the positive aspects and understand individual strengths.

In recent years, there has been a growing interest in supporting mental health and well-being beyond traditional clinical settings and extending into highly relevant contexts, such as the workplace. When employees experience high levels of well-being, they are generally more engaged, perform better, and take fewer unplanned leaves (Hanebuth et al., 2006; Krekel et al., 2019). Focusing on wellbeing in the workplace not

only benefits the individual, but also the wider organization in terms of cost savings and improved work dynamics (Cooper & Dewe, 2008).

Although mental well-being in the workplace is receiving increasing attention, the well-being of researchers in academia is often neglected. The world of academic research is full of challenges, including pressures to *publish (or perish*), obtaining funding, or constant job insecurity while balancing teaching and research activities (Nichols et al., 2022). Within such demanding environments, stress, burnout, or even depression and anxiety can easily arise if not managed. Recent studies have shown that academic researchers face more mental health challenges than other populations of similar age or education (Barry et al., 2018; Levecque et al., 2017). Particularly, predoctoral students and postdoctoral researchers seem to be more susceptible to common mental health issues than the general population (Friedrich et al., 2023; Moss et al., 2022). This underlines the urgent need for further research into the well-being of researchers in order to better understand and address these issues.

However, while there is a robust body of research on general well-being (e.g., Diener 1984; Keyes 2002; Ryff, 1989), there is a significant gap in studies and theoretical models dedicated to the well-being of academic researchers. This chapter seeks to address this gap by exploring the complexities of well-being within the academic research community.

In the next section, we will present the main concepts associated with well-being, as well as the main frameworks of the dimensions involved in well-being.

2. Definition and models of well-being

2.1. Using the Positive psychology framework for understanding well-being

Positive Psychology (PP) has the potential to provide a comprehensive framework that addresses the well-being of academic researchers while also addressing the new challenges they face. The PP framework, in addition to the prevention of mental health disorders, aims to promote and enhance the positive aspects of human functioning and overall well-being (Huppert & Johnson, 2010). This field of scientific knowledge addresses aspects such as resilience, well-being, happiness, optimism, or strengths – attributes that may lead to fulfilment and flourishing (Seligman & Csikszentmihalyi,

2014). Hence, the overarching goal of PP is to understand and contribute to optimal functioning at the individual, group and societal levels (Seligman & Csikszentmihalyi, 2000). In recent years, there has been a growing interest in PP.

According to the pioneering authors of this approach (Seligman & Csikszentmihalyi, 2000), the goal of PP is to shift the focus of psychology from merely addressing the negative dimension of well-being to fostering and promoting its positive dimension. PP emphasizes the importance of cultivating virtues and strengths by offering a rigorous examination of the conditions and processes that help individuals and institutions thrive (Gable & Haidt, 2005).

2.2.Main frameworks on well-being

2.2.1. Diener's model (1984)

The theoretical models aimed at studying subjective happiness and well-being are based on the Greco-Roman philosophical foundations. The eudaimonia described by Aristotle and the hedonism promoted by Epicurus are very relevant in current models of PP. In 1984, Diener proposed his tripartite model called *Subjective well-being* (SWB), which incorporates three different components: positive affect, negative affect, and life satisfaction. Despite being pioneer, this model has received critics, mainly because of its perceived inadequacy in capturing the depth of meaningful experiences (Filep, 2012).

2.2.2. Ryff's model (1989)

Ryff (1989) proposed her *psychological well-being* (PWB) model identifying six factors: (1) self-acceptance, referring to a positive attitude towards oneself, accepting and acknowledging both strengths and weaknesses; (2) positive relations with others, having satisfying and secure relationships with other people; (3) autonomy, defined as self-determination and self-regulation of one's behavior according to one's values and needs despite societal pressures; (4) environmental mastery, refers to the capability of effectively manage life circumstances and demands to satisfy personal needs and values; (5) purpose in life or the belief that one's life is full of meaning and purpose providing the individual a sense of direction; and (6) personal growth that involves a sense of constant development and improvement.

Hence, Ryff covered the limitations of the Diener's model with the inclusion of more factors. The PWB model allowed to shift the focus from short-term affective well-

being (e.g., happiness) towards the recognition of the importance of life's purpose, fostering meaningful relationships and a sense of self-fulfillment (Ryff, 1989).

2.2.3. Keyes's model (2005)

Keyes' (2005) multidimensional conceptualization of well-being is another notable contribution. This framework included the affective states (i.e., related to personal perceptions and life evaluations), psychological and social functioning. Specifically, it comprises three dimensions: (1) *emotional (or hedonic) well-being,* which focuses on the experience of positive feelings about oneself and life; (2) *social well-being*, which emphasizes the importance of community connections and societal value, including aspects, such as social coherence, actualization, integration, acceptance, and contribution; and (3) *psychological (or eudaimonic) well-being*, which is in line with the six domains identified by Ryff. Moreover, this author explained that individuals might be in a state of "flourishing" (as opposed to "languishing") when they experience high levels of subjective, psychological, and social well-being.

In a similar vein, Gallagher et al. (2009) proposed a hierarchical structure of well-being with 14 components, as shown in Figure 1. The three second-order factors (hedonic, eudaimonic, and social well-being) emerged as unique indicators, but they were quite highly correlated with each other and were combined to give an overall measure of well-being.

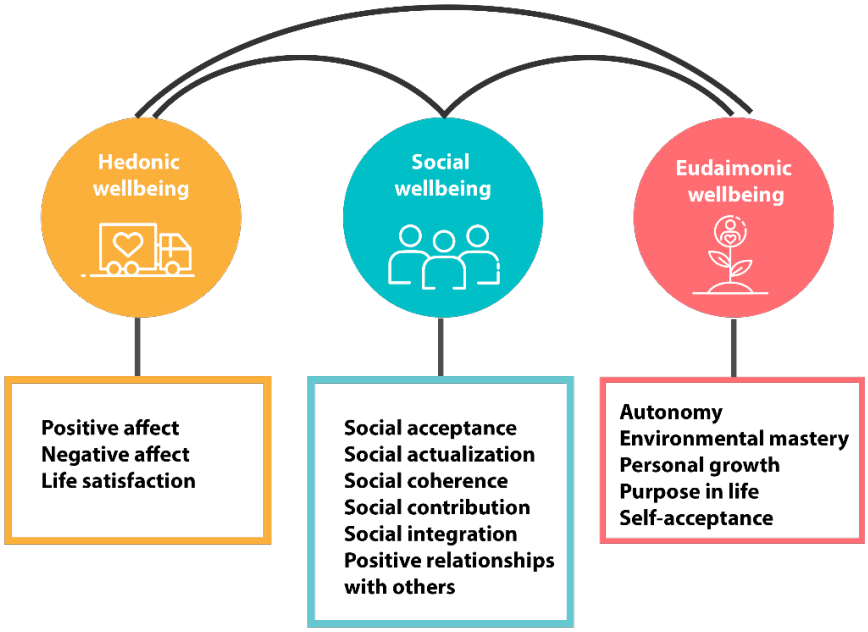


Figure 1. The hierarchical structure of well-being (Gallagher et al., 2009).

2.2.4. Authentic Happiness theory (Seligman, 2002) and PERMA's model (Seligman, 2011)

One of the most influential models is the Authentic Happiness theory of Seligman (2002). Seligman identified three pathways to happiness: (1) *Positive emotions* (e.g., pleasure, ecstasy, warmth, comfort, etc.), in which a life dedicated to these emotions is called "the pleasant life" and is constitutes the pursuit of life's pleasures; (2) *State of Flow*, in which the only relevant thing for the person is the activity done at that precise moment, and a life lived in this way refers to the "engaged life"; that is, in the flow experience, the person is completely immersed in the experience (e.g., writing, drawing), and it is only after the completion of the activity that the person can feel happiness and well-being (Csikszentmihalyi, 1996); and (3) *Life of meaning*, which is associated with a life driven by purpose and the pursuit of eudaimonia. This concept refers to belonging to and serving something that you believe to be superior to yourself, and it is referred to as having a "meaningful life". Moreover, these pathways can coexist, offering a multifaceted approach to happiness (Lambert D'raven & Pasha-Zaidi, 2016).

In 2011, Seligman expanded his understanding of well-being with the development of the PERMA model of flourishing, which integrates two new pathways to happiness: building positive relationships and achievement. The PERMA's model is the acronym for the following elements as the main factors of well-being (see Figure 2):

1. *Positive Emotions*: the experience of hedonic feelings of happiness (e.g., joy, content, cheer).
2. *Engagement*: the psychological connection to activities or organizations (e.g., feeling interested or absorbed, engaged in life).
3. *Relationships*: the feeling of being socially integrated, supported by others, and satisfied with social connections.
4. *Meaning:* the belief that one's life is valuable, and that one is connected with something greater than oneself.
5. *Accomplishment*: the progress toward goals, feeling capable to do daily activities, and experiencing achievement.

In this multidimensional model, Seligman included both hedonic (i.e., happiness) and eudaimonic (i.e., meaning in life) aspects of well-being, bridging gaps that existed in previous models, such as in Diener's (1984) or Ryff's (1989) models. Thus, this model

represents the cornerstone upon which future theoretical models of happiness and well-being were initiated (Burke & Minton, 2019).

Seligman argued that the five components of the PERMA model are intrinsically rewarding (Goodman et al., 2018). In order to achieve a fulfilling life, it is necessary to promote all the components of the model. In support of this, research shows that high scores on the PERMA dimensions are associated with improved academic performance, feelings of competence, and altruistic behaviours such as volunteering (O'Connor et al., 2017). In addition, the model is associated with better physical health, increased vitality, and greater life satisfaction in college students and the general population (Coffey et al., 2016).

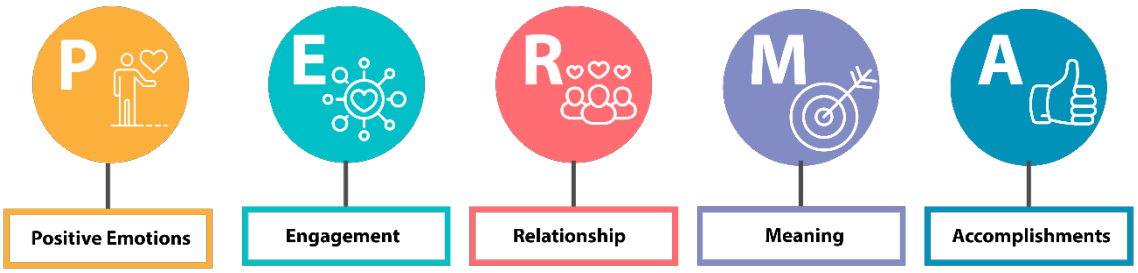


Figure 2. The PERMA model (adaptation from Seligman, 2011)

2.2.5. The conceptual model of Huppert and So (2013)

Huppert and So's (2013) developed a conceptual framework in order to provide a comprehensive understanding of well-being. They examined the symptoms of prevalent emotional disorders, specifically anxiety and depression, as classified in the primary manuals of mental disorder (i.e., the Diagnostic and Statistical Manual of Mental Disorders – DSM, and the International Classification of Diseases – ICD). The aim of this research was to identify the "positive" traits opposite to each symptom. Through a systematic, deductive process, the authors delineated ten characteristics of optimal well-being or "flourishing":

1) competence (e.g., Most days I feel a sense of accomplishment from what I do)
2) emotional stability (e.g., I felt calm and peaceful)
3) engagement (e.g., I love learning new things)
4) meaning (e.g., I generally feel that what I do in my life is valuable and worthwhile)

5) optimism (e.g., I am always optimistic about my future)
6) positive emotions (e.g., Taking all things together, how happy would you say you are?)
7) positive relationships (e.g., Taking all things together, how happy would you say you are?)
8) resilience (e.g., When things go wrong in my life it generally takes me a long time to get back to normal – reverse score)
9) self-esteem (e.g., In general, I feel very positive about myself), and
10) vitality (e.g., I had a lot of energy).

After analyzing these indicators across 22 European countries, Huppert and So (2013) found that both the hedonic (i.e., presence of positive emotions) and eudaimonic (i.e., positive functioning) elements were underlying the high levels of well-being. Their cross-country comparison revealed several disparities: Nordic nations (e.g., Finland) manifested the most robust well-being metrics, Eastern European regions (e.g., Poland) reported the least, while Southern and Western European countries exhibited diverse outcomes (e.g., Spain). For example, Spain was in the top ranking of self-esteem; but Spain also showed the lowest ranking in competence and vitality.

Overall, these findings highlighted the multidimensionality of the concept of well-being, and the need to distinguish it from other constructs such as life satisfaction (as the correlation between the ten indicators of well-being and life satisfaction was low).

3. Well-being at workplace

3.1. Importance of well-being in the workplace

Well-being is an issue that concerns not only researchers, but also national authorities of countries and various organizations. As a result, some countries are taking steps to promote and improve the well-being of their citizens. For instance, national public health objectives as described in the report entitled “Healthy People 2030” include identifying and developing strategies to promote resilience and well-being (Koh et al., 2021). Evidence points out the importance of mental health for overall well-being, as it also causally contributes to healthy aging and longevity (Cross et al., 2018; Kushlev et al., 2020; Ngamaba et al., 2017). Moreover, evidence strongly suggests that factors

reflecting healthy psychological functioning, such as having high levels of life satisfaction or sense of purpose, predict physical health -independent of mental health problems, such as depression- (Chida & Steptoe, 2008; Park et al. 2023; Pressman et al., 2019; Zaninotto & Steptoe, 2019).

Well-being is related to our general health, including its physical and mental aspects. Furthermore, researchers and practitioners (i.e., doctors, psychologists, psychotherapists, social workers, and others) increasingly emphasize that our mental health is closely connected to our workplace environment (e.g., Page & Vella-Brodrick, 2009). The more stressful the environment at work is, the more health problems the individual has (Schmidt et al., 2014). Additionally, an adequate standard of living is also crucial for maintaining well-being. Individuals facing financial constraints and struggling to make ends meet may find it challenging to allocate resources for simple life pleasures and necessary medical appointments. Thus, even economic aspects of life may significantly affect our well-being. Hence, the "Healthy People 2030" report points out a strong emphasis on a holistic understanding of health in the context of social and economic circumstances when assessing the quality of life (Koh et al., 2021).

Worker well-being is an important topic in organizations, consultancy and academia. However, its definition is not clear. Wijngaards et al. (2021) aimed to answer the question "What is worker well-being?", and they concluded that worker well-being is a multifaceted concept and that it can be operationalized in a variety of constructs, such as *job satisfaction* (i.e., the cognitive evaluation of satisfaction with work situation), dispositional *job affect* (i.e., the general tendency to experience emotional states at work), *job emotions* (i.e., the emotional states, experienced at work, that remain stable for seconds or minutes, occurring infrequently with specific triggers), *job moods* (i.e., emotional states, experienced at work, that remain stable for hours or days, occurring relatively frequently with nonspecific), and *work engagement* (i.e., a positive, work-related state of mind, characterized by vigor, dedication, and absorption).

In terms of stability of well-being over time, two reviews of longitudinal studies have examined the dynamics of well-being. The narrative review by Sonnentag (2015) identified job stressors, job resources, interpersonal relationships, and the work-home interface as predictors of employee' subjective well-being. Similarly, the systematic review by Mäkikangas et al. (2016) reported that employee well-being was generally high but changed over time. Specifically, younger employees and frequent job

changers experienced greater changes in well-being than older employees and those in stable employment.

In addition, the focus on employee well-being has become a key concern as modern workplaces evolve. During the COVID-19 pandemic, job insecurity has increased worldwide and several changes in the workplace (e.g., remote working) have occurred. Hence, models of the relationship between the workplace and well-being need to be reviewed. Academic environments, which are demanding by nature, are not exempt from these concerns. The impact of the pandemic is causing additional stress for academic researchers (e.g., disruptions to research schedules and online teaching), highlighting the need to be more proactive in addressing mental health at work. Thus, an effective solution for academia could be to focus on the promotion of skills aimed at improving well-being.

In the next section, we will review the main models aimed at identifying the underlying dimensions of well-being in the workplace.

3.2. Main models of well-being at work

Researchers in the field of organizational studies have been assessing several dimensions of well-being at work. This wide range of concepts can be grouped under the umbrella of well-being constructs, which include job satisfaction, work engagement, job involvement, affective organizational commitment, positive and negative affect at work, flow states, intrinsic motivation, flourishing and vigor (Fisher, 2010).

As we will see, in the last 25 years, several theories aimed at improving the knowledge on well-being have been developed, emphasizing different aspects: (a) several types of job stressors, (b) the importance of job resources and (c) the fluctuation and dynamic processes of well-being depending on the events experienced at work (Sonnentag et al., 2023). Moreover, the importance of analyzing individual and organizational processes have been highlighted (Bakker, 2015). In the subsections below, representative models of all the aspects that have been highlighted for understanding well-being at work will be explained.

3.2.1. Overall Well-being at Work Model (Fisher, 2014)

According to the *Overall Well-being at Work Model* (Fisher, 2014), the components that cover well-being in the workplace closely align with the three components that compose the overall well-being in life (Gallagher et al., 2009). Thus, the

components “subjective”, “eudaimonic” and “social” well-being are also present in the multidimensional construct of well-being at work.

Following Fisher’s conceptualization (2014), well-being at work can be represented as a series of interrelated concentric circles that represent different dimensions of general well-being. Within this model, the innermost circle represents the "*positive affect at work*", referring to the pleasant mood and emotional states experienced during work. This circle is contained in the "*subjective well-being at work*" circle, which includes negative affect at work and cognitive assessment of work satisfaction (or similar attitudes) at work. Lastly, besides integrating the two previous circles, the third circle includes the "e*udaimonic well-being at work”* and “*social well-being at work*", emphasizing a sense of purpose and connection in the workplace (see Figure 3)

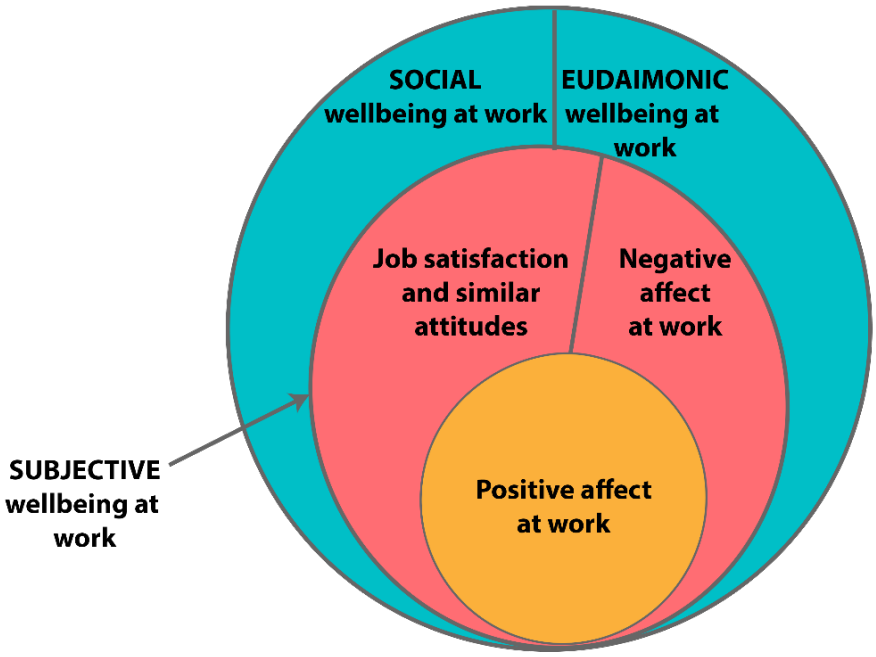


Figure 3. Components of Overall Well-being at Work (Fisher, 2014).

In the following points, the different components that compose the Overall Well-being at Work model are described (see Figure 4):

1. *Subjective well-being at work.* It includes positive attitudinal assessment of work as well as the experience of positive and negative affect. Regarding satisfaction and related attitudes, *job satisfaction* -which is similar to life satisfaction- refers to workers'

cognitive judgement of their workplace experience. Another commonly assessed job attitude involved in the well-being at work is *organizational commitment*, which refers to the degree to which employees resonate with the organization's goals and values (i.e., normative commitment), and/or feel part of the organizational family (i.e., affective commitment).

As regards to *affect*, transient moods or emotions experienced while working are also involved in well-being. On the one hand, positive affect is conceived as the pleasant mood and enthusiasm that arises in workers. A particular construct that contributes to positive affect is *vigor* at work (Shirom, 2003, 2011), defined by feelings of physical strength, emotional energy, and cognitive liveliness. On the other hand, negative affect reflects aversive emotional states (e.g., anger, tiredness). Both positive and negative affect can be differentiated according to two dimensions: (1) hedonic tone (i.e., the pleasure), and (2) arousal (i.e., the level of excitation). For instance, work engagement is related to high hedonic tone and high arousal; job satisfaction with high hedonic tone and low arousal; work addiction is correlated with low hedonic tone and high arousal; burnout is associated with low hedonic tone and low arousal; and, finally, happiness is related to high hedonic tone and intermediate levels of arousal.

2. *Eudaimonic well-being at work* includes several constructs that partially overlap with eudaimonic well-being:

- *Job involvement* refers to the individual's identification with work and the degree of basing one's self-esteem in the current work role.
- *Work engagement*, described as a favorable and fulfilling mindset at work. Specifically, this state is characterized by vigor (i.e., emotional energy and cognitive liveness), dedication (i.e., involvement in work activities, and their perception as important significant challenges), and, lastly, absorption (i.e., complete focus in the work tasks, being unaware of the time passing).
- *Thriving at work* refers to the sensation of growth in one's job and making progress toward self-actualization.
- *Flow* at work refers to the pleasant state of being fully absorbed in a challenging task, achieving an uninterrupted rhythm of work.
- *Intrinsic motivation at work* is highly associated with flow construct, characterized by the feeling of pleasure, interest, and enjoyment experienced during work, fulfilling the needs of competence and self-determination.

- *Meaning in work* is a construct that consists of two aspects: "meaning *in* work" (i.e., feeling fulfilled by doing tasks considered important in the workplace) and "meaning *at* work" (i.e., feeling of belonging to the organization, or of a particular group within it). Particularly, the "meaning *at* work" may contribute to social well-being at work, described below.
- *Calling at work* refers to perceiving the inherent meaning in one's job. If vocation involves helping and supporting others, it could also contribute to the social well-being at work.

3. Social well-being at work. This component is described as fostering quality relationships in the workplace, creating a safe and positive work environment (Fisher, 2014). As previously mentioned, social well-being is closely related to eudaimonic well-being, as the maintenance of positive social relationships at work may promote engagement in one's work activity. Fisher (2014) identifies several components that can promote social well-being at work: *satisfying relationships at work,* which includes positive relationships with colleagues and leaders; and *social support,* which refers to given or received support in the work context. This support, that may be emotional or instrumental, has been identified as a predictor of well-being and a buffer against work-related stress. However, the aforementioned constructs do not fully represent the experience of having strong and positive relationships with coworkers. Thus, although other components (e.g., *feeling of belonging* to the organization/particular group at work or the participation in *positive and helpful social gatherings*) have been proposed as relevant to the social well-being at work, further research on the conceptualization of this construct is still needed.

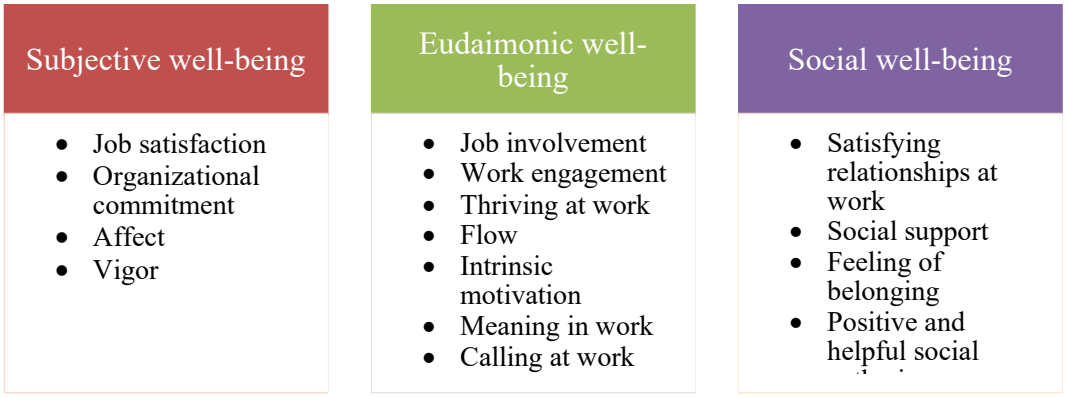


Figure 4. Specific components of Overall Well-being at Work

3.2.2. The Job Demand-Control Model (JDC) (Karasek, 1979) and the Demand-Control-Support Model (JDCS) (Karasek & Theorell, 1990).

The Job Demand-Control Model (JDC) shows the relationship between work characteristics, health, and well-being. This model has been used to explain how working conditions can influence employee well-being and the prevalence of work-related health issues, such as the burnout syndrome and cardiovascular diseases (Wu et al., 2023). Moreover, it has been used for developing workplace intervention strategies aimed at reducing stress and improving employee health and satisfaction (Häusser et al., 2010). The model proposes that two dimensions of the work environment are related to the possible negative consequences at work:

1. *Job demands.* They include all those organizational and psychological demands that an individual faces in the workplace (e.g., workload, deadlines, role conflicts, or physical or emotional demands).
2. *Job control.* It represents the extent to which a person is able to control their tasks, and includes two constructs: *skill discretion* (i.e., the ability to use one's own skills) and *decision authority* (i.e., the autonomy in making decisions, timing, and method control).

This model focuses on the relationship between job demands and the degree of control that individuals have over their work environment and how this relationship impacts on stress and well-being. The combination of the intensity of these two dimensions results in four types of jobs with different effects on psychological well-being: active jobs, low-strain jobs, high-strain jobs, and passive jobs. High-strain jobs are associated with increased stress and a higher risk of health problems, while jobs with high demands but also high control tend to be more manageable and less stressful.

Two hypotheses have been developed to explain the interaction between the two dimensions of this model (Häusser et al., 2010):

- *The Strain Hypothesis*. This hypothesis suggests that both high job demands and low job control independently contribute to increased job stress and negative health outcomes (e.g., adverse effects on employee well-being).
- *The Buffering (Interaction) Hypothesis*. This hypothesis suggests that the negative effects of high job demands on employee well-being are mitigated or buffered by the presence of high job control. This interaction implies that control over one's work can be protective against the harmful effects of excessive job demands.

Finally, *the demand–control–*support model (JDCS) (Karasek & Theorell, 1990) extended the JDC model adding the social support, which considers the level of emotional and instrumental support that employees receive from colleagues, supervisors, and the organization as a whole (see Figure 5). Thus, while the lack of social support from colleagues and supervisors may suppress the moderating role of job control in the relationship between job demands and stress reactions, the high levels of social support can act as a buffer against the negative effects of high job demands and low job control, promoting employee resilience and overall well-being (Bakker et al., 2003)

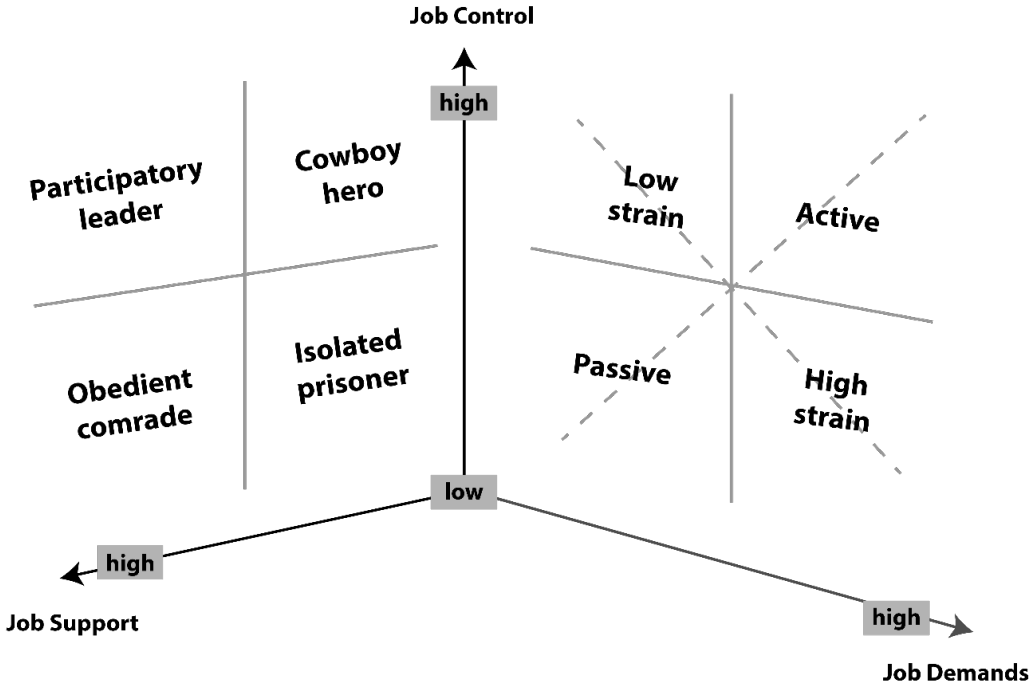


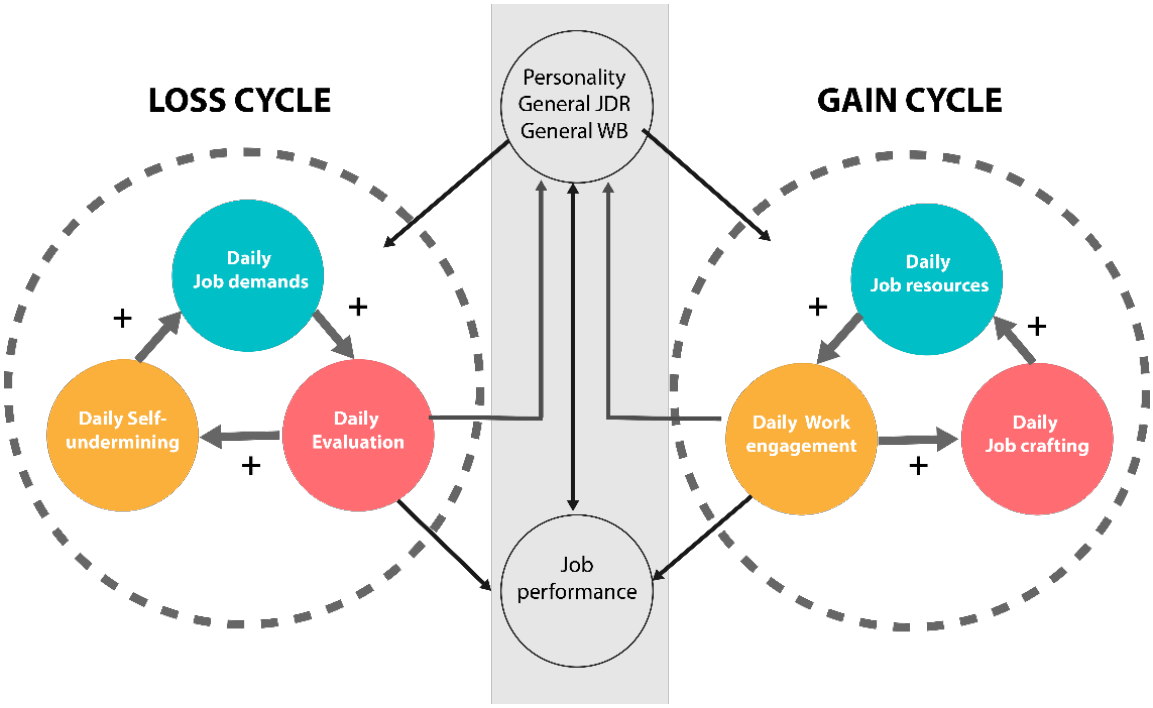
Figure 5. The three-dimensional Job Demand-Control-Support (JDCS) model (adapted from Karasek & Theorell, 1990).

3.2.3. The Job Demand-Resources Model (JDR) (Demerouti et al., 2001)

The JD-R provides a comprehensive model that can be applied to different work environments, categorizing different risk factors for burnout into two general categories:

1. The *job demand dimension* represents again all those organizational and psychological demands that an individual faces in the workplace.
2. The *job resources dimension* refers to the physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals, and that help to reduce job demands. Hence, the difference between this model and the two previous models (i.e., JDC and JDCS), is the substitution of "job control" for "job resources" as the second dimension.

In this model, the buffer between job demands and well-being is not related to autonomy in decision making and task performance, but rather to the presence of useful resources which function to meet the demands (see Figure 6). The core assumption of this model is that burnout is developed when demands are high and job resources are low. However, resources are recognized as effective agents that facilitate recovery and ultimately foster engagement (Bakker et al., 2014).



Notes. JDR = Job Demand-Resources; WB = Well-being

Figure 6. The Job Demand-Resources Model (JDR) (Demerouti et al., 2001)

3.2.4. Conservation of Resources (COR) Theory (Hobfoll, 1989; 2002)

The Conservation of Resources (COR) theory highlights the role of resources (or things that individuals value). According to the COR theory, when individuals perceive a threat to or loss of their resources, they tend to seek and acquire additional resources as a preparation for stressful situations (Hobfoll, 1989). Resources include object resources (e.g., car, tools for work), condition resources (e.g., employment, tenure, seniority), personal resources (e.g., key skills and personal traits such as self-efficacy and optimism), energy resources (e.g., credit, knowledge, money), and social resources (e.g., emotional support, a sense of belonging, and opportunities for collaboration and assistance during challenging times) (Hobfoll et al., 2018).

The COR theory suggests that the loss or weakening of these resources can lead to stress, burnout, and other negative psychological outcomes. On the contrary, the acquisition, maintenance, and increases in resources are associated with increased well-being and resilience. The theory highlights the importance of understanding how individuals manage and protect their resources in the face of life's demands and stressors. Alarcon et al. (2011) found that resources are used to cope with challenging situations and to function effectively. Another concept in COR theory is the resource caravan, which suggests that resources are accumulated rather than isolated (Hobfoll, 2002).

3.2.5. The social embedded model of thriving (SEMT) (Spreitzer et al., 2005)

The SEMT model shows how individuals thrive at work when embedded in environments that support agentic behaviors and can self-sustain this state through positive spirals of agentic behaviors and resources. Hence, it emphasizes the role of social relationships and the workplace environment in promoting well-being and positive outcomes.

Thriving is defined as a type of eudaimonic well-being based on self-determination. It is likely that thriving drives personal and self-development toward higher levels of functioning in the workplace but also beyond it. It is described as "the psychological state in which individuals experience both a sense of vitality and a sense of learning at work" (Spreitzer et al., 2005, p. 545). Both vitality and high levels of learning, are essential for employees to thrive (see Figure 7).

The two underlying assumptions of this model stress the importance of the work context: the social structural features of the focal *work unit context* and *resources produced*. Regarding the work unit context, it is critical for employees to perceive trust, respect, broad information sharing, and decision-making discretion in the workplace from teams and work units, as it is more likely to respond with agentic behaviors that promote their experience of thriving. As regard the resources produced, when individuals exhibit agentic behaviors in their work (i.e., task focus, exploration, and heedful relating), they generate a range of resources during the process (i.e., knowledge, positive meaning, positive affect, and relational resources) that, in turn, reinforce these agentic work behaviors, thereby enhancing their thriving. Hence, when individuals are in circumstances that allow agentic actions, thriving can be a self-sustaining system that provides its own fuel. The agentic behaviors are:

1. *Task Focus* (i.e., the degree to which individuals focus their behavior on meeting their assigned responsibilities at work). It involves maintaining attention to staying committed to achieving specific objectives or tasks at work.
2. *Exploration* (i.e., the willingness to seek out new opportunities, ideas, and experiences at work). It entails a proactive and open-minded approach to discovering novel solutions, processes, or approaches.
3. *Heedful Relating* (i.e., the importance of interpersonal interactions and relationships in the workplace, taking care of others, and subordinating their individual agendas to the effective functioning of the system). It involves being attentive, empathetic, and considerate when engaging with colleagues, superiors, and subordinates.

High job demands, such as role overload and insecurity, appear to be a barrier to well-being (Gkorezis, 2016). Only work demands that include important relational requirements and are seen as challenging promote thriving, particularly in circumstances where the individual feels free, empowered and valued. Finally, organizations can persuade employees to engage in agentic behaviors and promote thriving through high performance work systems, intensive training and performance monitoring, and the provision of opportunities, knowledge and power.

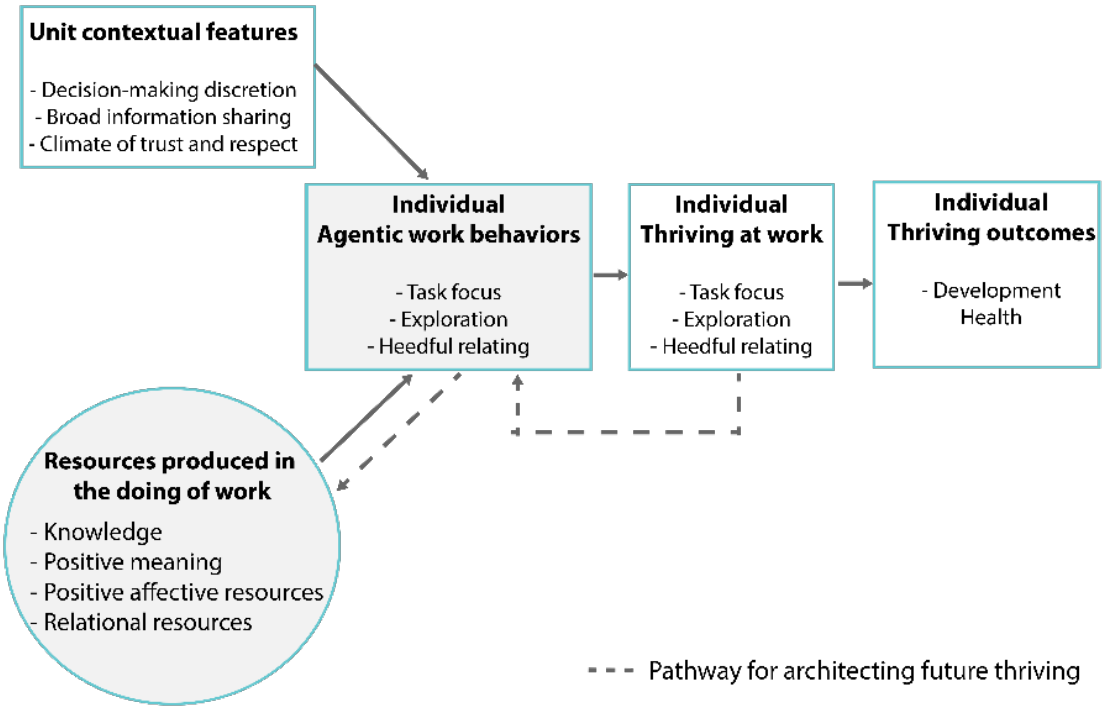


Figure 7. The Social Embeddedness of Thriving at work (Spreitzer et al., 2005)

The benefits of thriving include not only improvements in well-being, emotional exhaustion, and work-life balance. It is also positively associated with work engagement, emotional organizational commitment, and job satisfaction, with positive effects on performance. However, the SEMT has certain limitations in that it only considers thriving at the individual level; the model focuses on how environments affect individuals rather than contextual units. Thus, collective thriving requires its own theory to develop knowledge about thriving at work as a multi-faceted construct (Locke & Golden-Biddle, 1997).

3.2.6. Leader Member Exchange Theory (LMX) (Graen & Dansereau, 1970)

Closely associated with transformational leadership, this theory helps to explain the individuals and organizational well-being as a result of the quality of relationship between organizational leaders and their subordinates (also defined as followers). These relationships can range from high-quality –marked by trust and mutual respect– to low-quality, characterized by conflict and mistrust. As a result, the nature of these relationships can influence both organizational and individual outcomes.

High-quality exchanges foster an "in-group" experience where employees feel valued and can obtain greater access to organizational resources, leading to improved well-being and productivity at work. Conversely, low-quality exchanges can alienate employees, creating an "out-group" dynamic that limits their integration and growing opportunities within the organization.

LMX theory emphasizes the role of communication in facilitating the development and maintenance of positive leader-follower relationships. This interaction evolves through two primary stages:

1. *Role-Taking.* This initial phase involves the leader assessing a new employee's talents and abilities, providing opportunities for the employee to demonstrate their capabilities.
2. *Role-Making*. This later phase is an informal negotiation between the leader and the employee, shaping roles and expectations associated with the workplace.

Research has shown that high-quality exchanges diminish harmful behaviors –such as theft or aggression– and contribute to positive work outcomes –such as job satisfaction, organizational commitment, and job dedication– (Martin et al., 2016; Eisenberger et al., 2019; Gerstner & Day, 1997). High-quality exchanges have been associated with transformational leadership. This kind of leaders, characterized by the

encouragement of creativity and high achievement, foster a healthier workplace by addressing employee's needs and support their autonomy or competence (Das & Pattanayak, 2022; Inceoglu et al., 2018; Bass & Avolio, 1994; Gilbert & Kelloway, 2014). Evidence showed that the role of a transformational and empowering leader is closely associated with employee's well-being (Nielsen & Munir, 2009).

In the demanding and competitive psychological climate, professors and academic leaders may particularly benefit from specific intervention programs aimed to cultivate high-quality exchanges with their research team members. Such programs can assist in developing supportive relationships that will cultivate both individual and collective well-being within academic institutions (Spurk et al., 2021).

Overall, the LMX theory provides a valuable framework for understanding the dynamics of leader-follower relationships and their impact on workplace well-being, underscoring the importance of effective leadership in fostering a thriving organizational culture.

3.2.7. Healthy and Resilient Organization Model (HERO) (Salanova et al., 2012)

The HEalthy and Resilient Organization Model (HERO) is a framework or model designed to promote the well-being and resilience of organizations, particularly in the context of their workforce. It focuses on creating a workplace environment that fosters the physical and mental health, as well as the adaptability of employees.

HERO integrates theoretical and empirical evidence from several fields such as the work stress, human resource management, organizational behaviour, and Positive Occupational Health Psychology (Salanova, 2008; Vandenberg et al., 2002). The focus of HERO organization is not only on fostering optimal functioning of the organization but also focuses on improving employees' and teams' processes (Salanova et al., 2012). In fact, compared to the previously developed positive workplace frameworks, HERO model (1) incorporates the concept of *resilience* (i.e., ability to manage disruptions in the workflow and bounce back to the regular state by meeting the established goals without endangering organization's production) on the individual and organizational level; and (2) gathers qualitative and quantitative evidence from both individual- and organizational-level (e.g., teams' supervisors, employees and customers) on the fostering of healthy organizational environment (Llorens et al., 2013).

The HERO "resilient" organizations (see Figure 8) cultivate well-being at the workplace by promoting:

1. *Healthy organizational resources and practices* (HORP) at three interconnected components or levels: (a) job/task (e.g., restructuring tasks to increase autonomy, feedback); (b) interpersonal (e.g., transformational leadership; supportive climate); and (c) organizational (e.g., work-family balancing policies). The access to resources enables employees to thrive and shine at work, maintain positive social interactions and promote personal well-being. Moreover, the balance between job demands and the available job resources could predict employee engagement (an essential indicator of employee well-being).
2. *Healthy employees and working teams*. By fostering positive psychological resources, such as self-efficacy, organizational-based self-esteem (i.e., the degree to which the employee beliefs they are an important and capable member of an organization; Pierce et al. 1989), positive emotions, trust (e.g., team trust), resilience, and work engagement (i.e., a positive, work-related state of mind) on the individual level, the organization will enforce interventions and strategies that prevent burnout and promote well-being at the workplace.
3. *Healthy organizational outcomes.* The organization is committed to not only promoting productivity (i.e., increasing the performance) but to continue maintaining the customer satisfaction and loyalty without overlooking the social impact of the organizational actions (e.g., cooperating with other companies or organizations). For example, healthy employees may perform their tasks better leading to higher customer satisfaction (Vermeeren et al., 2012).

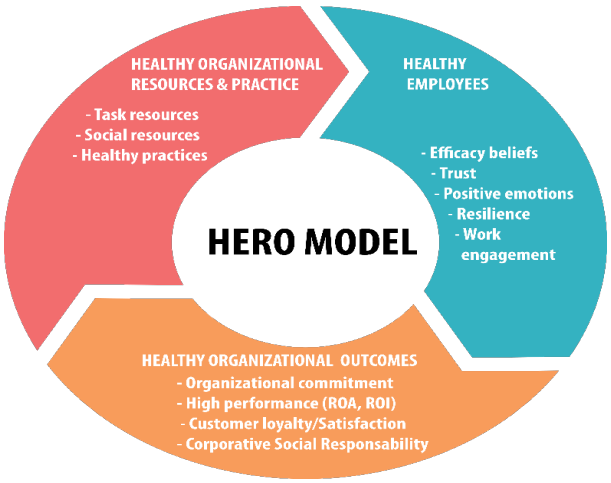


Figure 8. Healthy & Resilient Organizations (HERO) model

3.2.8. A review on health and well-being at work (Sonnentag et al., 2023)

To disentangle the complexity of all the models of well-being at work, Sonnentag et al (2023) conducted a systematic review to identify the predictor variables that promote (vs. threaten) physical health and well-being (i.e., hedonic and eudaimonic) at work (see Figure 9). To do so, they analyzed the interpersonal environment, off-job experiences, and employees' behaviors. In the following points, the main findings regarding the *individual workplace's factors* associated with well-being found by Sonnentag et al. (2023) are summarized:

1. *Individual factors.* This refers to the resources and demands that individuals encounter at work. Its protective factors have been related to *job resources*, such as autonomy (i.e., job control), learning opportunities, and task variety. On the contrary, the risk factor to experience physical health and well-being are *challenge stressors* (e.g., workload and time pressure) and *hindrance stressors* (e.g., hassles, role conflict or ambiguity), being especially important the latter one the most relevant to predict the long-term impairment.
2. *Interpersonal and teamwork factors.* This is referred to as the interpersonal environment. On the one hand, the protective factors have been related to the *social support* depending on the stressor -including instrumental (e.g., help with work tasks) and emotional (e.g., appreciation and warmth) aspects-, the social identification with their group and organization, working in a team (vs. working alone). On the other hand, the risk factors are associated with *interpersonal conflicts, harassment, incivility* (i.e., low-intensity deviant behavior with ambiguous intent to harm, violating the norms for mutual respect), and *ostracism* (i.e., perception of being ignored or excluded by others).
3. *Leadership factors.* The protective factors have shifted from behaviors described in leadership theories (e.g., transformational leadership, task-oriented leadership, change-oriented leadership, ethics-oriented leadership, and leader-member exchange) to more *specific behaviors by which leaders can impact employee health and well-being* (e.g., by acting as role models for health awareness and health behavior and by emphasizing good work-life balance). However, there are risk factors for well-being that come from the leadership dimension, such as *abusive supervision* and forms of destructive leadership.

In addition to individual workplace factors, there are *individual behaviors* that affect physical health and well-being. These factors are highly relevant, as they are shown as active agents of their job conditions. For instance, in the past, job control was primarily considered as an inherent characteristic of the job; however, contemporary perspectives recognize that employees can proactively acquire job control through practices, such as job crafting. These individuals factor identified as promoters of well-being are:

1. *Proactive behavior*, which refers to the different behaviors that employees do to influence their own work context. This includes job-crafting (i.e., proactive strategies involve making intentional changes to the characteristics of one's job to better align the job with personal needs, goals, and skills) or voice behaviors (e,g., communication of ideas).
2. *Prosocial behavior,* which refers to engaging with others at work (e.g., giving organizational citizenship behavior, providing support).
3. *Emotional labor,* in which individuals manage their emotional processes using their emotion regulation.
4. *Recovery activities at work (e.g., taking breaks) and physical exercise (e.g., engaging in social activities, pursuing hobbies).*
5. *Boundary management between work and private life.* Employees can actively take care of this balance by reducing the use of technology at home. Moreover, as it is bidirectional, enhancing well-being at home can impact on the well-being at work.

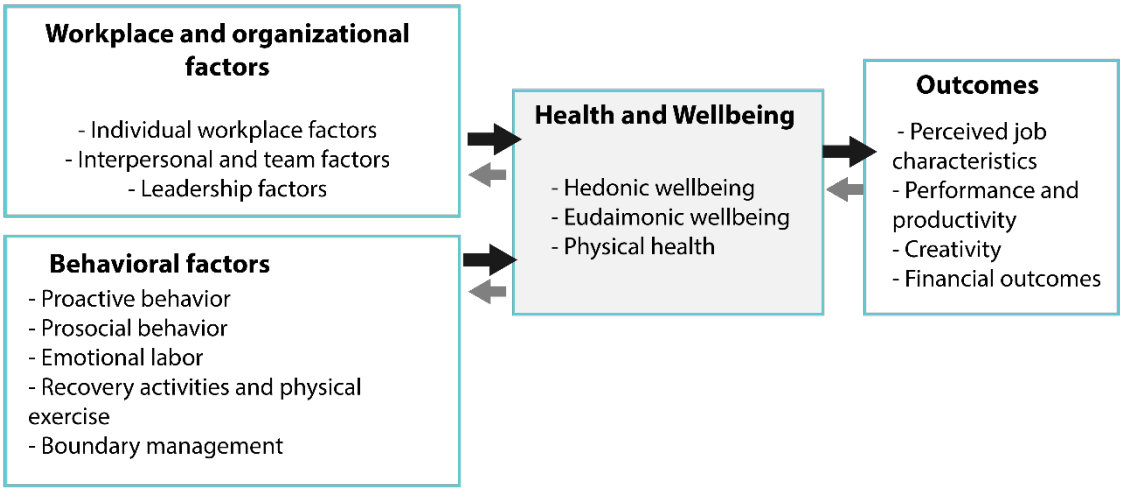


Figure 9. Key areas in research on well-being at work (Sonnentag et al., 2013)

4. The effect of digital, life and entrepreneurship competences in the well-being

4.1. The effect of digital competences on well-being

4.1.1. Digital competences framework

Digital skills enable people to use technology in different life contexts such as working, learning, shopping, entertainment, in that way they are linked to almost every sphere of life. In addition, ITU (2021) publication points out a further perspective and sees digital skills as a "key enabler of countries' digital transition and indispensable for its success". Strengthening digital skills has therefore become an integral part of many national digital transformation strategies changing the level from domestic to national. UNESCO's definition highlights that "digital skills are defined as a range of abilities to use digital devices, communication applications, and networks to access and manage information".

The DigComp Framework extends the earlier definition and introduces the term of digital competence, which involves the "confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes" (Council Recommendation on Key Competences for Life-long Learning, 2018). Taking a further step, Downer (2021) defined the term of "digital literacy" as the ability of individuals to meaningfully engage with a broad range of technologies, and in contrast, defined "individual digital skills" as the ability to complete specific tasks or use individual technologies or services, learned throughout 'skills journey'. The journey is associated with the path that goes from being unaware of the existing opportunities introduced by digitalization, to constructing knowledge about its use in almost every field of life.

The provided definitions illustrate a shift in the understanding of digital skills, evolving from a basic proficiency in using digital tools to a more intricate level of competence. This expanded view now encompasses activities such as data collection, selection, and security, constituting an integral part of digital literacy. Digital literacy is understood as the comprehensive ability to seamlessly integrate data management and its digitalization across various aspects of life. This transformation encompasses the entire spectrum of information, its practical application, and the complete data retrieval and security system. It transcends individual capabilities, extending to national strategies and

aligning with the international recommendations as articulated within the DigComp framework.

The DigComp framework identifies the key components of digital competence in 5 areas, as shown in Figure 10.

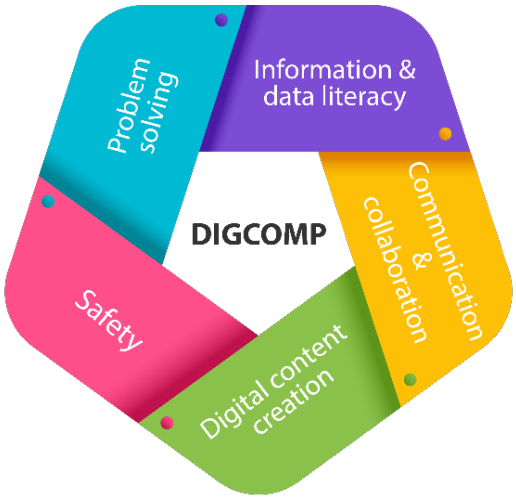


Figure 10. The 5 areas included in the DigComp framework.

There are 21 competences that are pertinent to these areas, and their titles and descriptors are defined below:

1. *Information and data literacy*: To articulate information needs, to locate and retrieve digital data, information, and content, as well as to judge the relevance of the source and its content.	*1.1 Browsing, searching, and filtering data, information and digital content.* To articulate information needs, to search for data, information and content in digital environments, to access them and to navigate between them.
	1.2 Evaluating data, information, and digital content. To analyze, compare and critically evaluate the credibility and reliability of sources of data, information, and digital content.
	1.3 Managing data, information, and digital content. To organize, store and retrieve data, information, and content in digital environments.
2. *Communication and collaboration*: To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship, and	*2.1 Interacting through digital technologies.* To interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.

to manage one's digital presence, identity, and reputation.	
	2.2 Sharing through digital technologies. To share data, information, and digital content with others through appropriate digital technologies. To act as an intermediary, to know about referencing and attribution practices.
	2.3 Engaging in citizenship through digital technologies. To participate in society by public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.
	2.4 Collaborating through digital technologies. To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of resources and knowledge.
	2.5 Netiquette. To be aware of behavioral norms and know-how while using digital technologies and interacting in digital environments, to adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.
	2.6 Managing digital identity. To create and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments, and services.
3. *Digital content creation*: To create and edit digital content to improve and integrate information and content into an existing body of knowledge while understanding how copyright and licenses are to be applied, as well as to know how to give understandable instructions for a computer system.	*3.1 Developing digital content.* To create and edit digital content in different formats, to express oneself through digital means.
	3.2 Integrating and re-elaborating digital content. To modify, refine, improve, and integrate information and content into an existing body of knowledge to create new, original and relevant content and knowledge.
	3.3 Copyright and licences. To understand how copyright and licences apply to data, information, and digital content.

	3.4 Programming. To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.
4. *Safety*: To protect devices, content, personal data, and privacy in digital environments. To protect physical and psychological health, to be aware of digital technologies for social well-being and social inclusion, and to be aware of the environmental impact of digital technologies and their use.	*4.1 Protecting devices.* To protect devices and digital content, to understand risks and threats in digital environments, and to know about safety and security measures and to have due regard to reliability and privacy.
	4.2 Protecting personal data and privacy. To protect personal data and privacy in digital environments, to understand how to use and share personally identifiable information while being able to protect oneself and others from damages, and to understand that digital services use a "Privacy policy" to inform how personal data is used.
	4.3 Protecting health and well-being. To be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies, to be able to protect oneself and others from possible dangers in digital environments (e.g. cyber bullying), and to be aware of digital technologies for social well-being and social inclusion.
	4.4 Protecting the environment. To be aware of the environmental impact of digital technologies and their use.
5. *Problem solving*: To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments, to use digital tools to innovate processes and products, and to keep up to date with the digital evolution.	*5.1 Solving technical problems.* To identify technical problems when operating devices and using digital environments, and to solve them (from troubleshooting to solving more complex problems).
	5.2 Identifying needs and technological responses. To assess needs and to identify, evaluate, select, and use digital tools and possible technological responses to solve them, as well as to adjust and customize digital environments to personal needs (e.g. accessibility).
	5.3 Creatively using digital technologies. To use digital tools and technologies to create knowledge and to innovate processes and products, and to engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.
	5.4 *Identifying digital competence gaps*. To understand where one's own digital competence needs to be improved or updated, to be able to support others with their digital competence development, and to seek opportunities for self-development and to keep up to date with digital evolution.

Hence, digital competences refer to the skill and aptitude to effectively use digital technology and tools in a modern environment. These competences include more than just technical knowledge, as they also include the ability to use digital technologies critically and creatively to solve problems, communicate, collaborate, and participate in society.

4.1.2. Digital competences and well-being

In order to discuss the issue of well-being and digital competences of researchers, first we need to define "digital well-being". However, assessing digital well-being remains a daunting task, given that multiple factors come into play, especially in today's rapid digitalization of infrastructure and the introduction of innovations in the tech industry. Discussions on digital well-being began almost a decade ago, primarily critiquing the adverse effects of technology use. Many of the initial discussions aimed to address concerns about the dangers of increased technology usage. Simultaneously, many authors recognized how digital tools can also enhance and uplift various aspects of life. These diverse conversations provide a more nuanced understanding of the difficulty of defining well-being at the workplace in the digital age.

Therefore, it is reasonable to assume that well-being may either deteriorate or improve as a result of working or spending time in an electronic environment. When individuals possess the necessary skills to use modern technology for work, their digital competencies can enhance their well-being. However, when someone lacks these essential skills, work may become not only stressful but also significantly more time-consuming and inefficient. Consequently, it is not surprising that technology has an impact on the well-being of individuals. The older generation often expresses concerns that the younger generation, with their superior digital competences, may have a competitive edge in the job market. The fear of becoming redundant is a factor that diminishes the sense of security and mental health. This aspect has been the subject of investigation for a considerable period of time (Korzeniewska, 1995; Struthers, 1977).

A particularly interesting aspect of this issue is currently driven by the emergence of automation and Artificial Intelligence (AI), alongside the dehumanization of workplaces (McClure, 2018). Surprisingly, even if the fear is unfounded, it still has a substantial impact on the mental health of employees. According to McClure (2018), a

significant portion of Americans experience anxiety and financial insecurity as a result of the rapid development of e-technologies in various aspects of life. He claims that:

> "*The rapid adoption of new technologies in the workplace, especially robotics and artificial intelligence AI, has motivated some researchers to determine what effects such technologies may have. Few scholars, however, have examined the possibility that a large segment of the population is apprehensive about the quick pace of technological change and encroachment into modern life. (...) there exists a sizable population of "technophobes" or those who fear robots, AI, and technology they do not understand. Technophobes are also more likely than non-technophobes to report having anxiety-related mental health issues and to fear unemployment and financial insecurity*" (McClure 2018, p. 139)

The problem, however, does not affect technophobes. As it turns out, even people who seem well-versed in new technologies, who use state-of-the-modern Information Technology (IT) equipment are not fully competent in digital competences. At the same time, studies indicate that over the past few decades, the demand for computer skills in the workplaces has been steadily increasing. It has been noticed that the advancement of IT has created many new job opportunities, including both the IT-producing jobs and the IT-using jobs. Even the existing jobs are under significant redesign or improvement to leverage the power of IT.

The emergence and rapid integration of generative AI models like ChatGPT and Bard are leading to a scenario where individuals are increasingly susceptible to believing fallacies generated by AI-based applications (Levine 2023). Consequently, this poses challenges for individuals seeking to maintain control over digital products. Moreover, there is a growing concern that the proliferation of AI-based solutions, taking on tasks traditionally performed by humans, may contribute to a sense of diminishing control over technology.

Early studies have demonstrated that managers and employees require both general and specific computer skills to effectively run their businesses (Benbasat et al., 1980). More recent studies have indicated a rising demand for workers with higher education and enhanced computer skills (Valletta, 2006). An analysis of nearly 100 million online job postings worldwide since 2007 reveals that 80% of these jobs necessitate certain computer skills, and positions that involve intensive computer use are growing faster than others (Burning-Glass, 2015). Consequently, displaced employees

who possess computer skills have a greater chance of securing new employment (Peng, 2017).

Thus, digital skills or their lack frequently impact people's professional lives, and consequently their personal lives and well-being. In general, even though we live in the age of distance communication and the Internet, it turns out that the majority of people use only selected applications and tools. For instance, some people are well versed in social platforms, such as Facebook or Instagram, but they are not proficient in text editors or other applications. Furthermore, many people have limited ability to seek necessary data on the Internet. Despite numerous efforts to promote and develop digital competence across various social spheres, such as education, health, and policy, the 2014 study "Measuring Digital Skills across the European Union (EU)" revealed alarming statistics. It found that 47% of the EU population lacks sufficient digital skills, while 23% have no digital skills at all. Additionally, 39% of the EU workforce exhibits insufficient digital skills, with 14% possessing none. Lastly, the study reported that 64% of disadvantaged individuals (e.g., those aged 55-74, those with low levels of education, or the unemployed) have an insufficient level of digital skills, with 38% lacking any digital skills (Biggins et al., 2017a).

4.1.3. The effect of COVID-19 in promoting digital competences

The outbreak of the COVID-19 pandemic resulted in an unprecedented transformation of many people's lives, as it imposed an immense pressure on many individuals, including students, pupils, teachers, and academics, greatly and rapidly impacting their well-being. As universities across nations struggled to provide continued teaching for their students, deficiencies were exposed in the large-scale remote teaching and online learning (e.g., complex home environments for learning, digital gap due to socioeconomic disparities, ineffective online learning systems, and inexperienced teachers) (Ali, 2020; Hasan & Bao, 2020). Consequently, a series of issues arose in online learning during this pandemic, such as the high cognitive load, academic burnout, and disengagement that raised frequently and could impair students' capability to learn and wreak damage on their psychological well-being (Cao et al., 2020; Islam et al., 2020; Pohan, 2020). Given these circumstances, there is an increased need for individuals to possess greater digital competence than ever before in order to adapt to and navigate the uncertainties (Wang et al., 2021).

Since the onset of COVID-19, it has become evident that individuals had to rapidly acquire and master entirely new digital competences across virtually all aspects of life. As a result, many individuals had to shift to remote work, while academics and teachers were compelled to embrace new teaching methods. Consequently, digital competences evolved into a market necessity. Moreover, it has been found that those proficient in both synchronous and asynchronous distance learning experienced less stress and pressure than others (Fabriz et al., 2021). Therefore, this new reality placed a significant disadvantage on those who were unfamiliar with the so-called DigComp.

The Digital Capabilities (DigCap) frameworks of 2009 and 2015, along with the DigComp frameworks of 2013 and 2016, all emphasize the importance of digital creation, innovation, communication, collaboration, participation or engagement, and digital identity. Furthermore, as previously mentioned, the most recent iterations of these frameworks have introduced the concept of well-being. DigCap justified this addition by citing research that highlights digital practices as potential sources of stress and concern for both teachers (e.g., workload) and students (e.g., cyberbullying and time management). Additionally, it asserts that "everyone can suffer if digital technologies are used without paying attention to human and environmental health and without considering whether digital practices are fully inclusive and equitable" (Biggins et al., 2017b).

To sum up, as far as scholars, researchers and academics are concerned, the digital skills they need to possess encompass two groups: (1) digital skills necessary for work and increasing workplace efficiency and (2) digital skills necessary for personal life management. Regarding the first group, the digital skills necessary for work and increasing workplace efficiency vary depending on the domain of research, but all scholars and scientists who write academic papers need: (a) information retrieval; (b) information gathering; (c) information storing; (d) information processing; (e) personal data protection; and (f) research data protection. Furthermore, each group must have the capability to effectively use the requisite software and electronic equipment within their respective domains (e.g., there may even be financial consequences if the equipment is mishandled, leading to damage). Moreover, those who also teach students need the following: (a) distant teaching skills and (b) distant learning skills. The deficiencies in any of those fields may lead to the deterioration of well-being by making the work more stressful, time-consuming and generally ineffective.

Hence, in order to ensure that the proper standard of well-being is achieved, one needs to have his or her privacy protected and must possess a proper degree of digital literacy necessary to fulfill professional duties and cope with everyday private life. Limited digital skills increase stress, the risk of burnout and consequently reduce job satisfaction and general well-being (Bakker & Demerouti 2007, Biggins et al. 2017a, 2017b; Gao et al., 2014; Schaufeli & Bakker, 2004).

4.2.The effect of life competences on well-being

4.2.1. The life competences framework

Life competences - also known as soft skills - are the skills we need to manage our lives effectively, set and achieve our goals, build and maintain relationships, and thus be successful in both our personal and professional lives. Interpersonal and personal attributes are key life skills that enhance an individual's interactions, job performance and career prospects. These competencies include communication, teamwork, problem solving, critical thinking, creativity, leadership, adaptability, and resilience. (Vasanthakumari, 2019).

In 2018, the Council Recommendation on Key Competences for Lifelong Learning identified “Personal, Social, and Learning to Learn” as crucial competences. The LifeComp framework recognizes these competences as applicable to all aspects of life, attainable through formal, informal, and non-formal education. The LifeComp framework consists of 9 competencies, each with three descriptors. The order in which the descriptors are presented is not an indication of sequence or hierarchy in the acquisition process. In other words, each competence has different dimensions, which can be developed at different levels by the individual:

1. Personal Area
1.1. Self-Regulation: Awareness and management of emotions, thoughts and behavior. - Awareness and expression of personal emotions, thoughts, values, and behavior. - Understanding and regulating personal emotions, thoughts, and behavior, including stress responses. - Nurturing optimism, hope, resilience, self-efficacy, and a sense of purpose to support learning and action. *1.2. Flexibility*: Ability to manage transitions and uncertainty, and to face challenges.

- Readiness to review opinions and courses of action in the face of new evidence.
- Understanding and adopting new ideas, approaches, tools, and actions in response to changing contexts.
- Managing transitions in personal life, social participation, work and learning pathways, while making conscious choices and setting goals.

1.3. Well-being: Pursuit of life satisfaction, care of physical, mental and social health; and adoption of a sustainable lifestyle.

- Awareness that individual behavior, personal characteristics and social and environmental factors influence health and well-being.
- Understanding potential risks for wellbeing and using reliable information and services for health and social protection.
- Adoption of a sustainable lifestyle that respects the environment, and the physical and mental wellbeing of self and others, while seeking and offering social support.

2. Social Area

2.1. Empathy. The understanding of another person's emotions, experiences and values, and the provision of appropriate responses.

- Awareness of another person's emotions, experiences and values.
- Understanding another person's emotions and experiences, and the ability to proactively take their perspective.
- Responsiveness to another person's emotions and experiences, being conscious that group belonging influences one's attitude.

2.2. Communication. Use of relevant communication strategies, domain-specific codes and tools, depending on the context and content.

- Awareness of the need for a variety of communication strategies, language registers, and tools that are adapted to context and content.
- Understanding and managing interactions and conversations in different socio-cultural contexts and domain-specific situations.
- Listening to others and engaging in conversations with confidence, assertiveness, clarity and reciprocity, both in personal and social contexts.

2.3. Collaboration. Engagement in group activity and teamwork acknowledging and respecting others.

- Intention to contribute to the common good and awareness that others may have different cultural affiliations, backgrounds, beliefs, values, opinions or personal circumstances.
- Understanding the importance of trust, respect for human dignity and equality, coping with conflicts and negotiating disagreements to build and sustain fair and respectful relationships.
- Fair sharing of tasks, resources and responsibility within a group taking into account its specific aim; eliciting the expression of different views and adopting a systemic approach.

3. *Learning to learn*
3.1. Growth mindset: Belief in one's and others' potential to continuously learn and progress. - Awareness of and confidence in one's own and others' abilities to learn, improve and achieve with work and dedication. - Understanding that learning is a lifelong process that requires openness, curiosity and determination. - Reflecting on other people's feedback as well as on successful and unsuccessful experiences to continue developing one's potential. *3.2. Critical thinking:* Assessment of information and arguments to support reasoned conclusions and develop innovative solutions. - Awareness of potential biases in the data and one's personal limitations, while collecting valid and reliable information and ideas from diverse and reputable sources. - Comparing, analyzing, assessing, and synthesizing data, information, ideas, and media messages in order to draw logical conclusions. - Developing creative ideas, synthesizing and combining concepts and information from different sources in view of solving problems. *3.3. Managing learning:* The planning, organizing, monitoring and reviewing of one's own learning. - Awareness of one's own learning interests, processes and preferred strategies, including learning needs and required support. - Planning and implementing learning goals, strategies, resources and processes. - Reflecting on and assessing purposes, processes and outcomes of learning and knowledge construction, establishing relationships across domains.

The metaphor of a tree was used to visually represent the framework, emphasizing the dynamic interdependence of all competences within an individual's growth over time. The tree has interconnected branches that are nourished by the roots, symbolizing the individual's connection to the socio-cultural context and to others. Each element of the tree is equally essential to its holistic development. Both the roots and the crown grow simultaneously, each contributing to the vitality and flourishing of the tree as a living entity. In Figure 11, LifeComp areas, competences, and descriptors are graphically represented with the three visual metaphors.

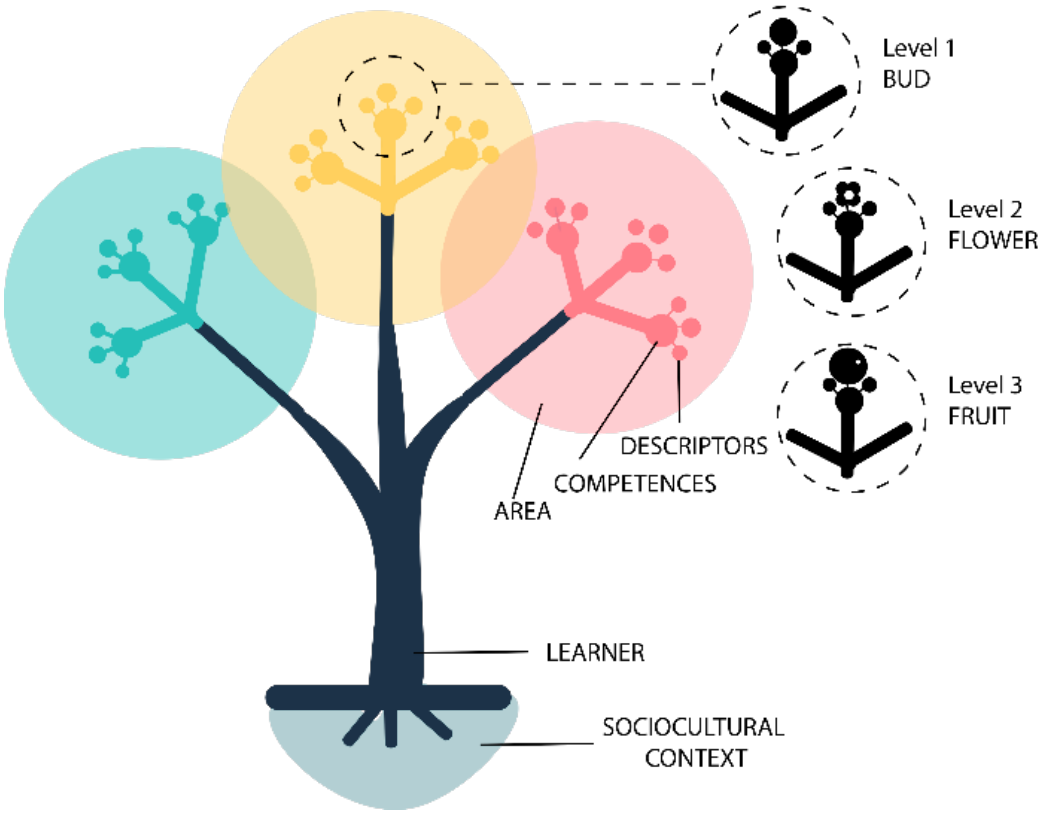


Figure 11. The visual metaphor of the LifeComp framework.

4.2.2. Life competences and well-being

Several studies conducted by the Stanford Research Institute and the Carnegie Mellon Foundation have shown that Fortune 500 CEOs believe that 75% of long-term career success depends on mastering life competences, with only 25% attributed to technical skills. This was confirmed by Wats and Wats (2009) who suggest that 85% of success in the workplace depends on these competences, leaving only 15% for hard skills. In a similar vein, Adler (2013) emphasized that "people do not underperform because of their lack of technical skills; they underperform because of their lack of soft skills", highlighting the importance of these competences.

In the past, soft skills were less important than technical skills. Today, however, the labor market has changed and many of the more "backroom" jobs are moving higher up the value chain, requiring more collaboration and communication skills. According to Bancino and Zevalkink (2007), soft skills are "must-have" skills in response to globalization and changes in technology. Therefore, the overall well-being, performance and career success of employees currently depends in part on the effective use of soft skills (Wheeler, 2016).

In terms of specific skills and their relationship to well-being, Wheeler (2016) highlighted communication, collaboration and self-management behaviors as key soft skills needed in the workplace. In addition, flexibility emerged as relevant in the workplace. Employees who can adapt to changing circumstances are more likely to thrive in dynamic work environments. These skills not only enable individuals to view challenges as opportunities for growth, but also enhance their problem-solving skills, contributing to an overall sense of well-being (Masten & Reed, 2002).

Self-regulation is also seen as a critical skill for coping with stressful situations and conflicts. It includes the ability to delay gratification, which is a predictor of individual well-being (Wilhelms et al., 2014). Additionally, strategies related to self-regulation of emotions (i.e., dampening negative emotions and amplifying positive emotions) have shown positive effects on personal well-being (Livingstone & Srivastava, 2012). Moreover, effective emotion regulation also contributes to better positive relationships; and similarly, empathy helps employees to better understand their colleagues and is linked to personal well-being (Daniels et al., 2014).

A sense of personal purpose enhances the motivation to actively pursue long-term goals and live a meaningful life. Individuals who engage in actions related to their sense of purpose tend to experience the highest levels of life satisfaction and personal well-being (Emmons, 2003; Sheldon & Elliot, 1999). In addition, the pursuit of life goals is also related to well-being (Koestner et al., 2002).

In short, several skills -such as communication, collaboration, flexibility, self-regulation, empathy-, are valuable life skills that evidence supports as relevant in achieving well-being; in addition, almost all other life skills are applicable in the working environment. Hence, evidence shows to acquire not only digital competences -as we seen in the previous section-, but also the need of acquiring life competences to increase the well-being in the workplace.

4.3. The effect of entrepreneurship competences on well-being

4.3.1. The entrepreneurship competences framework

Entrepreneurship is the process of identifying, creating and pursuing opportunities to develop and manage a business with the aim of making a profit and bringing innovative

ideas, products, or services to the market. It involves taking calculated risks, organizing, and managing resources, and being willing to try new actions to achieve success.

Entrepreneurial skills, as defined within the Entrepreneurship Competences Framework (EntreComp) includes a comprehensive set of competences required for individuals to effectively engage in entrepreneurial activities (Bacigalupo et al., 2016). It identifies three areas, each comprising a set of 15 competences that can be acquired in different levels of proficiency. The areas and competences are:

Ideas and Opportunities	○ *Spotting opportunities*: consists of finding and taking advantage of opportunities to create value, being aware of the demands and challenges that need to be addressed and, also, forming new relationships that join societal, economic and cultural perspectives aiming to create value. ○ *Creativity*: finding ways and opportunities to create value, making use of innovative approaches and integrating knowledge with the available resources as a way to create value. ○ *Vision*: visualizing the future to facilitate the transformation of ideas into actionable effort. ○ *Valuing ideas*: detecting the worth of ideas and opportunities in creating value (i.e., social, economic and cultural) ○ *Ethical and sustainable thinking*: evaluating the outcomes of ideas that have the potential to create value as well as the entrepreneurial actions on the specific target (e.g., community, market, society and environment), considering the way the action plan and the long-term goals (i.e., social, cultural and economic) have been established and acting responsibly.
Into Action	○ *Taking the initiative*: taking responsibility for actions that may bring value, accepting challenges and being able to work independently to achieve planned goals. ○ *Planning and management*: setting goals for short-, medium- and long-term and managing action plans to achieve them. ○ *Coping with uncertainty, ambiguity and risk*: being able to adapt to uncertainty and decrease the chances of failure when achieving plans. ○ *Working with others*: ability to work autonomously and in a group to transform ideas into actionable goals, solving problems and fostering connections with others in the professional field. ○ *Learning through experience*: using every opportunity for value creating as a chance to learn (e.g., individually or in a group), being able to consider the learning from both success and failures.

Resources	○ *Self-awareness and self-efficacy:* the capacity of reflecting on one's immediate, intermediate and distant needs and goals, evaluate individual and group abilities as well as the areas of potential improvement and, also, the belief in one's capacity of growth despite encountering obstacles or setbacks. ○ *Motivation and perseverance*: determination to transform ideas into action and fulfill one's needs of accomplishment, having patience and persistence when pursuing individuals or group long-term goals. ○ *Mobilizing resources*: managing resources (i.e., material, non-material and digital) and competences (i.e., technical, legal, tax and digital) that are necessary to transform ideas into actionable goals. ○ *Financial and economic literacy*: evaluate the cost of transforming an idea into activity that may bring value; this includes the assessment of the financial state to maintain the activity in the long-term. ○ *Mobilizing others*: motivate others to join and support actionable ideas by being proficient and persuasive communicator and negotiator.

The EntreComp framework provides a holistic and comprehensive view of entrepreneurial skills, emphasizing not only the technical aspects but also the personal qualities and attitudes that contribute to entrepreneurial success. In the context of the EntreComp framework, entrepreneurship is considered a cross-cutting, essential competence that can be applied by individuals, groups, and existing organizations in various aspects of life. The framework defines entrepreneurship as the action of recognizing and seizing opportunities and ideas and transforming them into financial, cultural, or social values (FFE-YE, 2012).

4.3.2. The relation between entrepreneurship competences and well-being

The relationship between entrepreneurial competences and well-being is an area of growing interest. While entrepreneurship is often associated with financial success and business growth, it also has implications for the well-being and personal satisfaction of individuals involved in entrepreneurial activities. For instance, research indicates that self-employment leads to higher job satisfaction (Carree & Verheul, 2011) and feelings of happiness (Andersson, 2008).

The key points (Shir et al., 2019) regarding the relationship between entrepreneurial competences and well-being are:

- *Autonomy and fulfillment.* Entrepreneurship provides individuals with a greater sense of autonomy and control over their work and life. The ability

to pursue their passion, make decisions, and shape their own destiny can contribute to a sense of fulfillment and well-being.

- *Mastery and personal growth.* Developing entrepreneurial competences involves continuous learning, skill acquisition, and personal growth. As entrepreneurs overcome challenges and acquire new knowledge and skills, it can enhance their self-esteem, confidence, and overall well-being.
- *Sense of purpose and meaning.* Engaging in entrepreneurial activities often allows individuals to pursue their personal values and contribute to causes they believe in. This sense of purpose and meaning can provide a deep sense of satisfaction and well-being.
- *Flexibility and work-life balance.* Entrepreneurship can offer flexibility in terms of work hours and location, enabling individuals to better balance their professional and personal lives. Achieving a healthy work-life balance is often associated with higher levels of well-being (Gelderen, 2016).
- *Social connections and support.* Entrepreneurship involves interacting with various stakeholders, including team members, customers, suppliers, and mentors. Building these social connections and support networks can provide emotional support, collaboration opportunities, and a sense of belonging, which can positively impact well-being.
- *Coping with challenges.* Entrepreneurial competences also involve developing resilience, adaptability, and problem-solving skills. These competences can help entrepreneurs navigate the inevitable challenges and setbacks they encounter, leading to a greater sense of well-being when they overcome obstacles.

Furthermore, the passion for entrepreneurship, driven by interests, self-efficacy, and engagement, can contribute to individuals' well-being (Wincent et al., 2010). Hence, developing an integrative multi-factorial measure of entrepreneurial success, beyond financial aspects, can provide insights into the impact on well-being (Wach et al., 2016). Moreover, the relationship between entrepreneurship and well-being is not solely driven by individual factors. Entrepreneurial orientation and business ownership have been identified as important contributors to psychological well-being (Stenholm et al., 2013).

Overall, understanding the relationship between entrepreneurship and well-being requires considering various factors and dimensions. Self-efficacy, workaholism, passion, success measures, entrepreneurial orientation, and perceived risk all contribute to the complex interplay between entrepreneurship and well-being.

5. Intervention programs of well-being at the workplace

Work has an important impact on the health and well-being of employees. Thus, it is important to implement intervention programs aimed at modifying work conditions and personal resources to foster employee's well-being and maintain organizational productivity and a positive work environment (Kowalski & Loretto, 2017). To date, several systematic reviews (e.g., Donaldson et al., 2019; Fox et al., 2022; Tetrick & Winslow, 2015) have been carried out to assess the current state of well-being interventions in the workplace on the individual and organizational or group-levels.

5.1. Individual vs. Organizational-level well-being at work

While the individual-level interventions for well-being in the workplace have focused on promoting *personal resources and capacities*, the organizational and group-level interventions on well-being aim have been focused on modifying the *work conditions* (e.g., increase of the job control or fostering co-worker support). However, the research on well-being at work has been mainly covering individual-level interventions until the last decades (Tetrick & Winslow, 2015).

5.2. Stress-reduction vs. Positive Psychology interventions for well-being at work

Regarding the *individual-level well-being interventions*, until recently, they have targeted employee's characteristics by including stress management techniques or emotional regulation strategies. However, the effectiveness of these interventions on both long-term stress management and organization-level well-being (e.g., productivity) is limited (Baumeister & Alghamdi, 2015; Noblet & Lamontagne, 2006). Thus, as the absence of mental illness does not equate to mental health (Keyes, 2000) -even if stress and well-being are interrelated constructs- the absence of stress is not equal to well-being. Contrary to the aforementioned stress-focused well-being interventions in the workplace, there has been a surge of interventions stemming from positive psychology which

emphasize the need to cultivate personal psychological strengths such as psychological capital (PsyCap; e.g., self-efficacy, hope, optimism and resilience) and gratitude (Peterson et al., 2006). Intervention programs focused on these variables have shown a small to moderate positive effect on the well-being at the workplace (Donaldson et al., 2019). Additionally, fostering these positive psychological strengths (e.g., flourishing) may not only promote well-being but also contribute to the reduction of stress levels and its consequences on the employee's health (Hone et al., 2015; Laschinger et al., 2009; Keyes & Grzywacz, 2005). In addition, current evidence suggests that the promotion of professional skills and leadership capabilities will not only improve employee's well-being but also enhance organizational well-being (e.g., productivity) (Appelbaum et al., 2000; Tregaskis et al., 2013).

5.3. Learning interventions as a strategy to foster individual- and organizational well-being at the workplace.

Learning interventions, which include training programs focused on developing competencies or resources to meet current or future work demands (Jacobs & Park, 2009) may be key to foster sustainable well-being by meeting both individual (Duckworth & Cara, 2012) and organizational (Whitman et al. 2010) needs at the workplace. Workplace learning interventions have gained importance due to two major changes in the organizational context: (1) The promotion of the *knowledge work* which defines individuals that can obtain information from several sources (e.g., organization but also from a relational context) and use to solve diverse problems in the workplace and update the received information with the personally obtained outcomes (Mohrman, 2003); (2) the shortening of the lifecycle of the work content, for example, an update in the specific work routine as a result of the use of information technology (Pelster et al., 2017). As a result of these changes, learning at work is thought of as a way to update employees' competencies.

Learning interventions for fostering well-being at work aim to develop different self-regulatory personal level resources that can be beneficial on both individual and organizational level (Mastenbroek et al., 2014). Some of the skills or capabilities that are being cultivated through these interventions are mindfulness, resilience, or stress management (e.g., Walsh & Arnold, 2018; Robertson et al., 2015). However, it is important to note that the carried-out learning interventions such as planned training or educational courses should be adapted to the employee's characteristics (e.g., motivation

to learn, self-confidence) and demands (van der Klink et al., 2001) as well as the contextual factors (e.g., work pressure, organizational culture) as these may facilitate or delay the progress (Sambrook, 2005).

As a way to operativize workplace learning and address these concerns, Clarke (2005) distinguished several categories of the workplace learning process: (a) location of the learning (off/on the job); (b) degree of planning (unstructured, structured); (c) role of the facilitator (passive by just engaging with the trainee when necessary or active by having a direct role in the learning process).

5.4. Format of delivery of the well-being at the workplace interventions

Regarding the format of the intervention delivery, research shows that individual, group and online interventions all significantly improve work-related well-being outcomes (Donaldson et al., 2019). In recent years, there has been a rise in the use of digital health well-being interventions due to their cost-effectiveness and easy accessibility (Howarth et al., 2018). Several comprehensive studies have established the effectiveness of these digital health interventions, delivered through mobile apps or internet-based programs, in reducing stress levels and increasing well-being in the workplace (e.g., Stratton et al., 2017). For example, a meta-analysis by Phillips et al. (2019) found moderate positive effects on stress and burnout levels as well as small positive effects of these types of interventions on well-being. Furthermore, the systematic review and meta-analysis by Carolan et al. (2017) provided additional support that occupational digital mental health interventions may foster employee's well-being and increase their productivity.

Other novel formats of intervention delivery are blended courses or *massive open online courses* (MOOCs) (Egloffstein & Ifenthaler, 2017).

The term MOOC was coined in 2008 by David Cormier following the production of the course "Connectivism and Connective Knowledge" by Stephen Downes and George Siemens. The inaugural MOOC, titled "Introduction to Artificial Intelligence," was initiated in 2011 by Stanford University and attracted over 160,000 participants (De Notaris et al., 2021).

MOOCs, characterized by their adaptability, flexibility and scalability (Tu & Sujo-Montes, 2015), recently started gathering empirical evidence as effective tools to promote learning processes in the workplace (e.g., learning and relearning skills, complementing formal training). In fact, results of the large-scale survey showed that

44% of the enrolled students were aiming to gain specific skills to perform their work tasks better (Christensen et al., 2013). The implementation of digital workplace learning interventions may be cost-effectively adapted to the MOOC format and launched for the predetermined number of employees (Egloffstein & Ifenthaler, 2017). As a result, MOOCs could contribute to fostering specific employees' competencies (Karnouskos, 2017), where the professionals show high personal and career-development learning purpose (Egloffstein & Ifenthaler, 2017). However, evidence on the acceptance and efficacy of the use of MOOCs in the workplace context is still scarce.

Serious games could be another novel format for increasing the impact of the learning interventions (Fleming et al., 2017). Serious games consist of computerized games aimed for serious purposes (i.e., education or instruction) rather than just mere entertainment. A specific branch of serious games in charge of the application that has previously defined the learning outcomes is *game-based learning*. Game–based learning, grounded in active learning methodologies, fosters individual engagement and provides challenges that motivate the achievement of learning goals (Romero et al., 2014). In fact, effective serious games may foster the development of multiple personal skills (Susi et al., 2007) and achievement motivation (Ahrens, 2015) by cultivating positive mood states which will encourage the individuals to continue playing (Zhonggen, 2019). Nonetheless, the use of serious games may be also distressing as the content of the computerized game may further increase the mental workload (Cowley et al., 2013). The following six properties for serious games may help to promote the learning process (Shute & Ke, 2012) without the additional mental workload:

(1) Set of rules and the game goal that resonates with the individual's emotional demands.
(2) Experiences that provide learning opportunities.
(3) Balance between the game's possibilities (e.g., level of difficulty) and the individual's capabilities.
(4) Modeling to make the learning process from experience more general and abstract.
(5) Motivate the users to create their individual path in the game.
(6) User-friendly interface.

The serious game and the MOOCs could be totally linked, or better, the MOOC could incorporate a serious game. The MOOC represents the vehicle for the educational

contents by media like videos, podcasts and slides. Serious game in a MOOC represents the laboratory part, that elicits procedural learning by practical situations.

When incorporating serious games into MOOCs, it is crucial for them to be intricately linked with the course structure, providing users with the opportunity to apply the knowledge they acquire (De Notaris et al., 2021). Although research on integrating serious games into MOOC learning paths is still in its early phases, scholars highlight that educational gamification immerses users in a rule-based system, enabling them to experience cultural roles and emotions. Similar to traditional games, players have the potential to enhance their cognitive (Locke, 1991; Bandura, 1986), emotional (McGonigal, 2011), and social skills (Squire, 2006). Studies have demonstrated how educational games can effectively motivate students and facilitate learning, offering a more interactive experience with multimedia environments compared to traditional learning resources such as books, audio, or video. Furthermore, serious games contribute to the development of cognitive skills, procedural and declarative knowledge, and critical thinking skills.

5.5. Considerations for future studies

Despite promising results from numerous reviews, the heterogeneity of the designs of both well-being intervention and assessment methods contributes to the inconsistency in the found evidence (Burgess et al., 2020; Fox et al., 2022). Thus, future studies on the workplace well-being interventions should consider several elements: (1) the need to introduce multiple components in order to target several variables of the well-being construct (Lamontagne et al., 2007; Montano et al., 2014); (2) to standardize the conceptualization and the assessment techniques of well-being, highlighting the positive functioning (vs. decreasing the stress levels) (Armaou et al., 2019); (3) to use multiple methodological approaches (e.g., experimental and quasi-experimental) in order to assess the wide complexity of the well-being interventions at the workplace (Nielsen & Miraglia, 2017); (4) to investigate the mechanisms of change to understand how specific interventions influence employee's well-being (Ryan et al., 2021).

A specific example of the challenging professional environment is academia, as the research in fostering well-being in this field is scarce (Kinman, 2008), there is a pressing need to foster learning processes in this population (Schmidt & Hansson, 2018).

6. The needs of the researchers at the workplace: Results of the focus group

6.1. Focus group members.

- Number of persons in Poland: 8
- Number of participants in Spain: 9
- Number of participants in Greece: 9
- Number of participants in Italy: 9
- Number of participants in Finland: 6

See Annex I for more information about the participants (from PhD students to Full Professors) that participated in each focus groups,

6.2. Current well-being situation of researchers at work

6.2.1. Could you provide a brief description of your role and tasks in your current position?

Poland: The tasks include: (1) Teaching; (2) Carrying out research; (3) Writing papers; (4) Preparing conference speeches; (5) Reviewing papers, books; (6) Administrative work; (7) Organizational work (e.g., organizing conferences, workshops); (8) Applying for research projects; and (9) Writing reports.

The roles include: (1) Academic teachers only and (2) Academic teachers and researchers at the same time. There were no persons holding only research positions in the focus group. Their role and tasks at university work include in detail:

1. *Teaching*. The academics start with teaching and the first issue is the confrontation with teachers. The factors which may disturb the well-being at teaching position include: the awareness that the university education provides us with theory but not practice.
2. *Research activity, delivering speeches at conferences, and deadlines.* Public speaking stress, insecurity whether we will be able to answer all questions asked to the speech.
3. *Publishing.* Lack of resources for proofreading, stressful reviews, combining personal work with professional life.
4. *Administrative work which deprives us of time necessary for the preparation to teaching tasks and carrying out research.* This overburden the researchers with

tasks that should be carried out by administrative workers who do not know legal provisions and administrative procedures.

5. There is no division of work into academic teaching and research.
6. Persons who are not prepared to some tasks are burdened with them (e.g., carrying out workshops in work safety rules, acting as IT administrator during conferences)
7. When organizing conferences, there are stressors related to the lack of IT support, low quality speeches, and financial problems resulting in lower quality meals at conferences.

Spain: The tasks include: (1) research tasks, such collecting data, analyzing data, reading of paper and writing, managing projects, coordination tasks in a group, project assessment, predoc supervision, social network dissemination, long-term planification, training, and applying for research projects; (2) teaching tasks, such as preparing teaching classes, and supervising students; and (3) academic or administrative tasks, such as participation in commissions and administrative work.
The roles include: (1) Researchers only; (2) Academic teachers and researchers at the same time; and (3) Students under training with formation, teaching and research roles.

Greece: They revealed their multifaceted roles in their current jobs. As aspiring researchers, PhD candidates are engrossed in conducting original studies, collaborating with faculty members, and contributing to the academic community. On the other hand, professors excel in their roles as educators, imparting knowledge to students in the Master of Positive Psychology program, while also actively engaging in research endeavors. Remarkably, a significant number of these professionals also serve as psychotherapists, using their expertise to foster positive change and well-being in their clients. The dynamic blend of research, education, and clinical practice showcases their commitment to advancing the field of Positive Psychology and making a meaningful impact in people's lives.

Italy: The group was composed of lecturers from different fields. In particular the focus group included 9 participants and 2 people that managed the focus group (Alberto Fornasari (UNIBA), Raffaele Di Fuccio (SGF)). Four participants were from the field of Education, two from Psychology (in particular Psychometry), one from Humanities, one from Biochemistry and one from Physics. The group included three PhD students (one in

the first year, one in the second and one in the third), two researchers, two associate professors and two full professors.

Finland: The group consisted of researchers from technology, humanities and arts ranging from doctoral student and post-doctoral researcher to university teacher and project manager. The spectrum of tasks reported by the group exhibited notable similarities, with the emphasis on specific tasks varying according to each respondent's respective position. The predominant roles identified included that of a researcher and a teacher, while many also fulfilled the role of an external expert, collaborating with companies or organizations.

6.1.1. How would you personally define well-being and well-being at work?

Poland: Well-being means that we feel satisfied, appreciated, healthy and not stressed. Well-being at work means that we can find at work: (1) good atmosphere; (2) amicable people, friendliness; (3) environment supporting creativity; (4) honesty; (5) equality of rights; (6) transparent procedures of promotion; (7) environment free of mobbing; and (8) environment encouraging to work independently and in accordance with individual schedules and pace of work.

Spain: Well-being is being well with yourself, feeling satisfied, appreciated, and healthy. Related to the work area is being in line with your values in the task you perform, and being in balance with other areas like your social relationships.

Greece: Well-being is defined as the unfolding and positive effort of resolving issues, the reward for the efforts made, the progress and evolution achieved each day, the mobility and motivations that drive individuals forward in their lives, as well as the attainment of happiness and a positive outlook on life. This comprehensive perspective emerged from the responses of the participants during the focus group discussions, reflecting their collective understanding and perception of well-being. More specifically, well-being includes: (1) continuous efforts to address our issues and improve our daily lives; (2) the reward for our hard work and efforts is a significant element of well-being; (3) achieving progress and growth in both our professional and personal lives contributes to the sense of well-being; (4) sustained movement towards our goals and the motivations that encourage us enhance our well-being; and (5) happiness and a positive outlook for the

future contribute to living a life with a positive direction. These elements provide a general perspective on how researchers perceive the concept of well-being in the workplace.

Italy: Well-being is a concept that the participants in the focus group find intriguing in the context of their lives, with a particular emphasis on its significance in the workplace. One participant highlighted the relevance of work as a crucial component of each individual's life. During the discussion, it became evident that a key factor contributing to well-being at work, and consequently overall well-being, is the availability of training opportunities that also involve family members. The group reached a consensus that a significant driver of well-being in the workplace is achieving a balance between professional responsibilities and personal life. This balance could be enhanced if work-related activities contribute positively to one's personal life and relationships, such as enjoyable travel experiences and vacations.

Finland: For a majority of the group, the central concern revolved around effectively managing stress. There was a unanimous agreement that while a certain level of stress is acceptable, it becomes problematic when stress is primarily linked to the work environment itself. The group also emphasized the significance of striking a balance between work and personal time. Given the nature of academic work, which lacks fixed working hours, individuals often find their work bleeding into their free time. Apart from these topics, the group also mentioned resource allocation, personal and professional interactions and ergonomics as contributors to well-being.

6.2.2. Are you satisfied and happy with your work?

Poland: Some members were satisfied, some reasonably satisfied and some dissatisfied.

Spain: The majority were satisfied with the work and they think that over time the sources of this well-being are changing.

Greece: The average participants not only expressed contentment and fulfillment in their respective roles but also conveyed a profound love and passion for what they do. Despite the absence of financial compensation for PhD students in Greece, these dedicated individuals demonstrated unwavering commitment to their research, teaching, and

psychotherapy responsibilities. Despite working long hours and encountering challenges in realizing the fruits of their labor, their passion and devotion to the field of Positive Psychology remained a driving force behind their motivation.

Italy: Members of the focus group expressed a generally high level of satisfaction. However, in some instances, it was noted that there is a tendency to operate in an "emergency mode", leading to increased stress levels.

Finland: A majority of the group expressed a positive sentiment in response to this question. They conveyed that they have experienced a high level of respect and support from their colleagues and peers within the department and the university.

6.2.3. In your opinion, do you feel that you have achieved a balance between your personal life and work? If so, why do you think this is the case?

Poland: Those who claim to have achieved the balance point out that they are assertive and have had to learn to set the boundaries, e.g. they have had to stop answering university emails outside the working hours, stopped picking up the phone at weekends, have learnt to work systematically, counting working hours (especially when working from home). Some members claimed that in order to achieve balance they had to change positions and move to a new place without a mobber.

In order to achieve balance, one needs to know what the exact rights and duties are. It is necessary for both employees and employers to observe the legal rules, workplace rules of social co-existence and ensure a good atmosphere at work. Employees who feel appreciated are more willing to work.

Spain: To keep research tasks on track, researchers must take personal time. Other variables highlighted were the pressure to publish and the constant presence of unexpected tasks that required calendar adjustments. These unexpected tasks created the sensation of not achieving or being stuck. Another challenge was mental overload, the feeling that one must have all tasks in mind to avoid missing any important ones, which can lead to fatigue and extend beyond the workday. As a contextual factor, participants highlighted the instability that the academic career brings, especially in the early years generates tiredness, disappointment and burnout. They felt that the system did not help to flourish their skills and willingness.

Greece: The researchers mentioned the challenge of balancing personal life and work on several occasions. The lack of balance between personal life and work is a common issue for many researchers, particularly when facing limitations like insufficient funding for doctoral programs in Greece, resulting in unpaid work for researchers and doctoral students. To achieve a better balance, researchers can strive for the following:

- More funding and support: Efforts should be made to improve research funding, allowing researchers to dedicate more time and resources to their work.
- Healthy work rhythms: Establishing healthy work rhythms and time management can help maintain a balance between work and personal life.
- Supportive work environment: The work environment should support the concept of work-life balance and encourage researchers to have a healthy personal life.
- Guidance and support from supervisors: Supervisors should be sensitive to researchers' needs and provide appropriate support and guidance.
- Prioritization and balanced approach: Researchers should set priorities and follow a balanced approach to work and personal life.

Italy: The focus group delved into the delicate balance between personal life and work. As mentioned earlier, participants emphasized the importance of integrating these two aspects to achieve holistic well-being. Notably, there was a suggestion to incorporate dedicated training moments, such as summer schools, with inclusive access for families (not directly in the training but within the event's organized structure). This concept was deemed appealing as it creates a familial atmosphere when activities conclude, offering participants a break from their homes while still being with their relatives. This approach was also considered for conferences, where adopting a similar framework could foster a better alignment between personal life and work. Participants further explored the critical role of the relational aspect. An example discussed in the focus group was department committees, which can be perceived as either somewhat tedious or impactful due to the stress they entail. Nevertheless, they provide an opportunity to engage and interact with colleagues. This relational aspect emerged as a crucial element contributing to overall well-being in the workplace.

Finland: The group emphasized how crucial it is to find a good balance between work and personal life. They stressed the importance of being assertive, setting clear

boundaries, and having organized work practices to achieve this balance. At the same time, researchers in the group talked about facing various pressures and challenges in their tasks, such as the constant need to publish and unexpected work demands that cause mental overload. Dealing with these pressures often leads to a feeling of being stuck or not achieving goals.

6.2.4. Does your work significantly impact your overall well-being? If yes, in what ways? Could you provide an example?

Poland: They spent about 40 hours per week working. Spending so much time at work means that the bad atmosphere at work negatively impacts our general well-being. Analogously, a good atmosphere and workplace conditions impact our well-being positively. If the employer praises the employee and appreciates his/her work, the employee comes back home in a good mood. If the employee is overburdened with administrative work, which is time-consuming, boring, and tedious, he/she comes back home frustrated, angry and depressed.

Spain: Regarding factors that contribute to generating well-being at work, participants highlighted that doing something meaningful or aligned with their values is rewarding.

Finland: The group reported that their work significantly enhances their overall well-being. Some described being a researcher as a vocation or a life mission. One respondent expressed that an academic job gives meaning to their life and garners social appreciation. Another, who also manages a spin-off company, highlighted that academic work brings balance into their life by allowing a focus on research without the added responsibility of managing others.

6.2.5. What aspects of your work contribute to boosting your overall well-being?

Poland: The overall well-being is impacted by the increase in job satisfaction at university. This is boosted by: (1) clear rules for teachers and students; (2) success at professional work (good student opinion polls, surveys, positive article reviews, promotions, praises and being appreciated at work); (3) achievements that are seen by supervisors (praises, rewards); (4) the sense of being an element of the team and being needed; (4) academic freedom (e.g., the constant enforcement of duties and the parametrization of scholarly work kill the motivation for creative work). Academic teachers and researchers are adults and should not be constantly controlled and evaluated;

(5) the job satisfaction is greatly diminished by the constant law amendments in the field of higher education; and (6) job satisfaction is also connected when students perform well. Satisfactory courses with students give us satisfaction. It gives us satisfaction when students tell us they liked our classes, and benefited from them.

Spain: Intrinsic motivation was highlighted as key in order to keep and maintain well-being. To have the freedom to decide how to do something and what to do is a protection even when they have too long workdays or no time for other activities. The great variety of activities and tasks can be seen as negative sometimes but also as exciting, especially because it is a challenge to develop new skills, and competencies and grow as a person.

Greece: Several aspects were highlighted:

- Discovering new aspects and knowledge in research broadens intellectual horizons and contributes to a sense of fulfillment from the progress of their work.
- The diversity of work challenges and opportunities provides a variety of experiences and keeps their interest alive.
- Professional travel allows them to explore new places and cultures, offering opportunities for personal and professional growth.
- Building connections with new fellow researchers fosters networking and idea exchange, strengthening the sense of community in their field.
- Financial compensation enhances the sense of well-being and satisfaction from their work.
- Participation in scientific conferences and continuous updates in their field keep their knowledge up-to-date and help them stay informed about the latest developments.
- Supervising and mentoring doctoral candidates provide the opportunity to pass on knowledge and experience to younger generations of researchers, reinforcing the sense of responsibility and fulfillment.
- These aspects of work contribute to enhancing the well-being of researchers and create a positive professional environment that encourages their development and goal achievement.

Italy: Work is perceived as an integral and highly impactful aspect of life. In this context, the discussion highlighted the importance of involving families in external work-related

activities. Participants expressed concerns about two primary aspects that were deemed significant: (1) *Work-Induced Stress*: There was a shared experience of stress caused by the workload, particularly noted by those in stable positions like professors. The overwhelming demands on researchers were identified as a source of stress; (2) *Time Commitment and Family Distances:* Participants also addressed the considerable amount of time required for various tasks and responsibilities, which could potentially strain family relationships. The term "divorce" was explicitly mentioned to underscore the possible impact of work-related time commitments on familial bonds.

Finland: A majority of the group highlighted the value of openly questioning things and engaging in creative discourse on various topics, both within their departments and with colleagues from different fields of expertise. Also, the meaningful nature of a researcher's work, contributing to the discovery of new things, was a common sentiment. Several respondents mentioned the sense of reward derived from publishing papers or teaching a course, citing the positive impact on their mental state.

6.2.6. What aspects of your work undermine your well-being?

Poland: The major reasons for dissatisfaction included mobbing, unfriendly atmosphere at a workplace, constant amendments of legal regulations, excessive expectations of employers overburdening the employee with additional tasks (not connected with teaching and research), excessive expectations concerning publication quality (that is publishing in the so-called renown journals with the maximum number of points).

Spain: The main reasons for dissatisfaction were multitasking, the constant change from one task to another, the feeling of not achieving an end product, and the lack of time to complete all of the required tasks. Additionally, many participants were performing roles that were not in line with their expectations, such as spending a lot of time on administrative tasks. Some participants felt that they were unable to focus on research, the reason why they started working in academia, because some tasks had deadlines while others (such as reading and research) did not.

The current situation shows that researchers are dealing with a lot of tasks. Participants expressed that even when they feel a strong vocation for the work, this is sometimes overwhelming. One of the reasons is the number of tasks to be done, but another reason

is that these tasks are very different between them and require the person to generate a wide number of skills and resources. Additionally, this multitasking demand generates the sensation of no-achieving, having a lot of tasks open all the time that triggers the sensation of not being focused and losing time because there is a need for time for connection and disconnection.

Sometimes they have the sensation of not getting a good return from their investment of time because the needs and competencies required for a specific project many times are completely different from another and they have to learn new skills and the ones learnt before are not necessary.

Greece: The following aspects were highlighted:

- Lack of resources and frequent inadequate funding for research programs can hinder access to necessary equipment, materials, and collaborators, limiting the effectiveness and scope of the research.
- Daily life demands, such as family obligations or personal responsibilities, can impact dedication and effectiveness in research work.
- Unpaid research work is a reality for many researchers, which can have negative consequences on their financial security and psychological well-being.
- University-related obligations, such as teaching and administrative responsibilities, can divert time and energy from research, causing disruptions and a sense of workload burden.

Italy: The primary theme that emerged from the discussion is the potential to strike a balance between personal life and workload.

Finland: The group highlighted stress as a major factor affecting their well-being.

6.3. Changes associated with COVID-19 in terms of well-being and new competences.

6.3.1. Was your well-being at work affected by COVID-19? In what sense? Are these effects still preserved?

Poland: The consequences during the COVID-19 were:

1. Physical health deteriorated (e.g., backbone problems, eye-sight problems).

2. The teachers had to read a lot of additional rules for distant-learning, frequently contradictory (it was stressful and tiring).
3. The classes, especially lectures, without the face-to-face contact were very stressful as teachers were unable to see students for technical reasons. Sometimes, they had the impression that we are talking to ourselves.
4. Working from home may be stressful if we have no conditions to work (a few persons in one room, someone quarreling)
5. Some courses -such as diploma seminars- benefited from the distance-learning course and individual meetings with students were much more effective.
6. The quality of equipment and internet connection affected the well-being.

Some effects still preserve, especially those connected with physical and psychological health, such as eye-sight deterioration, depression, etc.

Spain: The pandemic situation put us in the need of being flexible, we needed to be resilient to adapt to new situations.

Greece: The well-being in the work of researchers/doctoral students was affected by COVID-19, as many planned training and counseling sessions were canceled or moved to remote formats. This led to a reduction in the effectiveness and impact of the training sessions and sessions on the beneficiaries, as distance may diminish interaction and the effectiveness of the tools used. After the COVID-19 period, it seems that people have a need for human contact and seek it in every way possible.

Italy: The COVID-19 period underscored the necessity for participants to enhance their digital skills. Notably, there was a perceived gap between younger researchers and their senior counterparts, with the latter expressing evident challenges in working with digital tools. However, members of the focus group asserted that after the conclusion of the COVID-19 period, a regression occurred, leading to a loss of acquired digital competencies.

Finland: The group's responses to the impact of the COVID-19 pandemic on their experiences were diverse, encompassing a range of challenges and positive outcomes. Negative aspects included a heightened sense of responsibility for students' well-being and the absence of real-world social connections such as informal gatherings. Conversely,

some found the transition to remote work transformative, continuing to work in a hybrid mode for increased productivity and global collaboration. Also, some mentioned the positive impact on free time, citing the revival of hobbies through advanced online conferencing technology.

6.3.2. During the COVID-19 period, did you have the need to develop new skills? To what extent were you able to fulfill this need?

Poland: The COVD-19 speeded up the acquiring new IT skills: (1) They had to learn TEAMS platform and other platforms such as zoom, skype, etc.; (2) they had to learn how to prepare moodle course, use onedrive storage; (3) the student now expects to get the answer instantaneously when he/she sends a message via a platform, which involves being more assertive; (4) it has increased creativity, self-motivation, independence; (5) students can use some tools such as kahoot and can see how many persons make similar mistakes and what is the correct answer. It is good for well-being because if you lose, you do not get a bad mark (i.e., in games there are always winners and losers but the consequences matter); (6) IT skills: ebooks, audio-books, podcasts, youtube; and (7) Korean heroes from secondary school should be introduced into the game to make it more attractive.

Spain: They learnt new skills, especially related to the use of technology and online skills. They felt that now they are more capable of managing uncertainty. This experience generates the sensation that they are capable of learning, adapting and doing new things in future situations, such as AI. They felt they had more tools to cope with new situations.

Greece: During the COVID-19 pandemic, the entire body of researchers needed to develop new skills, especially in digital tools that would enhance their work from a distance. They tried to learn how to use new platforms for virtual meetings, tools/exercises/activities for remote collaboration and project management, as well as to incorporate technology into education. Furthermore, they endeavored to modify their curricula and activities in order to ensure the experiential nature of their education and research, despite the challenges imposed by the pandemic.

Italy: The emergency situation was instrumental in enhancing competencies with online digital devices, particularly in the realms of online and remote lessons, as well as conference calls. The group faced challenges with the multitude of applications available

for video calls, requiring users to adapt to new platforms each time. Participants expressed a generally positive perception of their ability to use these tools, with a few notable exceptions.

Finland: In addition to mastering technical skills and navigating new software, the group underscored the importance of translating real-world practices into virtual settings. This adaptation was exemplified by a heightened proficiency in organizing and streaming online events. Beyond technical aspects, participants emphasized the significance of effective time management. Prioritizing tasks and discerning when to decline assignments that may not align with their schedule or overall goals became crucial. For some this meant the development of enhanced self-control such as overcoming the distraction of online video games.

6.3.3. Currently – after the pandemic situation – do you think that you still have to develop new skills for developing your work properly (e.g., online lectures, PhD online defenses, etc.)

Poland: For now their skills are sufficient in the majority of cases. But they are aware that technological changes are constant and every 4-5 years software updates, new software, appliances and equipment are released on the market and they will need to keep up-to-date to be able to work efficiently.

Spain: The COVID situation opened the spectrum of new ways to work. Before the pandemic everything was face-to-face and now a lot of things can be done online. There is more freedom in terms of being or not at work. A negative effect is the change in some social dynamics that are not the same.

Greece: After COVID-19, they still feel the same need to evolve and cultivate new skills. Technological advancements continue to influence the way they work and teach, and they recognize the importance of staying informed and capable of adapting to these changes. Additionally, maintaining the experiential character of their activities remains a significant aspect to ensure the effectiveness and impact of their work.

Italy: The group emphasized their need for various competencies, with a particular focus on the perceived lack of training in entrepreneurial skills, which they believe should be improved. Additionally, young researchers, such as PhD students, identified specific

technical competencies they require, including the need to enhance skills in data analysis and statistics.

During the discussion, two distinct types of competencies were highlighted: (1) *Emotional Competence:* Deemed important for maintaining a balance between personal life and work; (2) *Training of Lecturers:* Participants reached a consensus that courses often feature specialists lacking a scientific foundation. Consequently, these courses are not tailored to the actual needs of the target audience that requires these competencies.

Finland: The consensus among the group was that the evolving landscape necessitates an ongoing commitment to skill development. Keeping abreast of new technologies, tools, and emerging online practices remains essential for effectively navigating the post-pandemic work environment.

6.4.Needs in competences identified by the researchers to protect well-being at work.

6.4.1. What life competences do you need in your work?

Spain: *Collaboration* is essential. The pandemic had a negative impact on this skill because everyone was primarily focused on their individual tasks. *Empathy* and *self-regulation* are also crucial because they contribute to increased flexibility. When someone can regulate their emotions, it becomes easier to avoid inflexible behaviors.

A *growth mindset*, which involves looking towards the future and seeking continuous improvement, is something that can and should be cultivated. Having a *clear goal* and *self-confidence* is key to preventing burnout at work.

Researchers also emphasize that it is always up to individuals to adapt or add new skills to their skill set, but there are no corresponding changes in the system.

Competencies may not be equally relevant throughout one's entire career. Critical thinking and a growth mindset may be particularly relevant at the beginning of one's career, but later, additional skills related to managing emotions, coping with uncertainty, and self-regulation may become more important. Not all job profiles will require the same skills.

Greece: All the life skills mentioned (flexibility, empathy, critical thinking) are extremely important. The participants emphasized the significance of the skill of

Flexibility, especially during the Covid-19 and post-Covid-19 era. The ability to adapt quickly and effectively to new situations and challenges is crucial for successfully facing difficulties and achieving well-being and success.

Strengthening these skills (Flexibility, Empathy, Critical Thinking) can certainly contribute to balance and problem-solving, and by extension, overall well-being. Specifically: (1) Flexibility (Adaptability): It helps us adjust to new situations and challenges, reducing stress and enhancing our effectiveness; (2) Empathy: It creates strong emotional connections with others and increases our social support and sensitivity to their needs; and (3) Critical Thinking: It enhances our ability to analyze information, solve problems, and make sound decisions.

By developing these skills, we become more adaptable and creative in various situations, better understand the needs of others, and make better decisions for ourselves and our environment. As a result, there is a greater sense of well-being, and life's challenges are better addressed.

The institution does not provide any opportunities to improve life competences.

Italy: The most frequently mentioned life skill was emotional competence, considered crucial for the workplace as it is fundamental for interacting with peers and students empathetically. The ability to establish significant relationships with colleagues was highlighted as a vital skill. Another aspect that emerged during the focus group discussion was stress resilience, given that the role of a professor is seen as one that necessitates coping with stress.

Another competency that participants mentioned and unanimously agreed upon is effective communication and collaboration throughout all stages of their careers.

Finland: The group highlighted "*empathy*" and "*communication*" among the listed skills as the most crucial for fostering good work ethics, collaborative efforts, and leadership skills. They emphasized the importance of extending empathy and effective communication not only towards others but also towards oneself, ensuring a positive balance between personal well-being and interactions with others.

6.4.2. What entrepreneurial competencies do you need in your work?

Spain: Participants emphasized the importance of all skills, while also noting that not every skill is universally required, and the necessity of specific skills varies based on individual profiles. For instance, senior professionals may require additional skills related to *resource acquisition and leadership*, whereas junior employees may benefit from skills related to *immediate action*. It is also worth considering whether the issue is about acquiring new skills or removing institutional barriers.

It is crucial to take into account the contextual level in addition to the individual level. Another key request is to identify the skills that are pertinent and essential for career development since not everyone requires the same skill set. Additionally, there is a need to facilitate access to relevant resources, as lack of information about opportunities is often a major obstacle.

Greece: The participants of the focus group acknowledge the importance of entrepreneurial skills, according to the European Entrepreneurship Competence Framework (EntreComp). However, there was no member of the group with entrepreneurial plans to develop these skills at any level.

The participants of the focus group acknowledge that these skills can positively impact a professional's well-being, making them more prepared and capable of coping with challenges and difficulties.

The institution does not provide any opportunities to improve entrepreneurship skills.

Italy: Entrepreneurial skills were a highly discussed theme during the focus group. Participants unanimously agreed that this competency is notably lacking among academic staff. In one case, it was emphasized that there is a lack of training on entrepreneurial skills throughout the university path. Specifically, a participant shared a story about opening a company that unfortunately closed after just three years. The participant attributed the closure to the challenge of applying skills that were not part of their usual "toolkit." They faced the business challenge with an academic approach, lacking the necessary knowledge for such situations.

Throughout the discussion, there was a consensus on the need for entrepreneurial education and training within the university, followed by guidance on how to transfer these skills to students. While life skills are considered "known," entrepreneurial skills were described as obscure yet attractive, and participants were conscious of the need for

them. Some participants highlighted the importance of acquiring funds through competitive calls and project management in EU-funded projects as valuable entrepreneurial training grounds for learning these skills.

Finland: One member of the focus group serves as their university's entrepreneur ambassador, and, according to their insights, the primary focus lies in learning how to organize one's work effectively for potential commercialization. This does not necessarily entail starting one's own company; rather, emerging opportunities for "soft-entrepreneurship" through agencies that handle business-side tasks are becoming more prevalent. This approach allows researchers to concentrate on marketing their unique skills and knowledge.

Other members of the group underscored the significance of honing skills in "self-awareness", "coping with ambiguity, uncertainty & risk", and "taking the initiative". They emphasized that cultivating these skills would be imperative if they were to contemplate venturing into entrepreneurship themselves.

6.4.3. What digital competences do you need in your work?

Poland: The following should be enumerated here: (1) distant teaching skills; (2) distant learning skills; (3) information retrieval; (4) information gathering; (5) information storing; (6) information processing; (7) personal data protection; (8) research data protection.

The COVID-19 pandemic showed that there was a need for distant teaching skills in synchronous, asynchronous and hybrid modes. In order to acquire those new skills, teachers had to first possess distant learning skills that enabled them to broaden their knowledge and acquire competences for distant teaching. There well-being increased together with the acquisition of new skills.

The skill of information retrieval is necessary as we live nowadays in the age of the so called information flood. In accordance with the Shannon's (1948) model of information flow, each piece of information may be affected by noise or silence in the information channel. The ability to seek for information and data, in the vast and constantly growing Internet resources, is a must for every researcher. What is more, it is crucial for researchers to be able to choose verified and non-verified information and data resources. Otherwise, their scholarly or scientific work, frequently, based on someone else's

previous research, may not be published and properly disseminated. Researchers need to disseminate their research results which is well illustrated by the saying "publish or perish". If they cannot publish papers in renown journals, the stress at workplace increases and their well-being decreases. In some countries the lack of academic papers published in a span of few years (e.g., four in Poland) may result in the academic being fired from the university or research institute. Having retrieved the necessary data, researchers need to gather it and store it for future reference. Therefore, some digital skills in that field are also necessary.

The new ghost writing, anti-plagiarism, anti-autoplagiarism policies of journals and publishing houses also decrease the well-being of scholars. Academics feel oppressed with the need to scrutinize previous research on the discussed topic on the one hand, and the necessity to do it in a different manner than previously done on the other hand. What is more, in the information flood e-world in many fields of science so much is published, that no one can be fully updated with research results. When criticized by reviewers, authors frequently feel oppressed, reprimanded or even humiliated.

The additional factor affecting well-being are copyrights issues. The researchers are afraid of infringing copyrights of others and having their copyrights infringed.

The researchers and academic teachers possess a varied range of competences. Some are very well versed in them and some not and have just basic skills. However, in general they assume that possessing the increases their well-being as their work becomes less stressful and they can perform some tasks faster thanks to them. If they do not possess them, the level of stress and frustration increases.

During the COVID-19 pandemic the majority of institutions started training in some distance-learning platforms, but there is not a sufficient range of training and workshops in other digital skills.

Spain: Certain skills, such as *programming*, seem more suited to a technological profile, while others are more fundamental and applicable to both research and teaching. Prioritizing *data protection and safety* is crucial for fostering a sense of security in their work.

While digital skills can greatly enhance task performance, considerations related to well-being, safety, and health protection are of utmost importance. Excessive technology use, for instance, can lead to fatigue. This is particularly pertinent for younger individuals, who should learn how to leverage technology for self-care.

The significance of clear communication and the simultaneous use of multiple resources and platforms can potentially affect well-being negatively.
It is also essential to raise awareness of the environmental impact associated with the use of technology.

Greece: It is correct to consider that all the digital skills defined by the European framework are equally important, as each one contributes to different areas and is a critical element for the effective use of technology in the field of education.
Specifically, researchers point out that they have developed all these digital skills to some extent due to the COVID-19 pandemic and the need for digitizing the educational and counseling process. The level of development of these skills depends on the requirements of each job and the environment in which they operate.
Regarding professional skills, they highlight that they have developed digital skills that enable them to collaborate with colleagues and other professionals from a distance, as well as to support their professional development through digital resources and educational programs.
Regarding pedagogical skills, they emphasize that they have developed digital skills that allow them to use technology to support education, learning, and assessment of educational activities.
Finally, regarding the skills of learners, they have developed digital skills that enable students and beneficiaries to use technology critically and effectively for their educational progress. This combination of digital skills at various levels helped them effectively address the challenges of the pandemic and ensure an educational process that meets educational purposes and objectives.
The group of researchers participating in the training program agree that enhancing these digital skills can have a positive impact on their overall well-being. Specifically, developing these skills provides them with the toolkit needed to tackle challenges and find solutions to problems that arise during their educational and professional activities.
The ability to leverage digital tools and platforms for remote education and collaboration with colleagues and participants was crucial during the pandemic. Without these capabilities, many classes and sessions would have been canceled or significantly hindered the educational and professional process.
The capacity to use technology to facilitate education, communicate with colleagues and students, and adapt to new demands has equipped them with the necessary tools to

respond to the challenges brought about by the pandemic with professionalism and success. Having developed these skills, they feel more self-confident and satisfied in their work, contributing to a positive impact on their overall well-being.
The researchers report that their institution has made diligent efforts by offering seminars (on digital education) to enhance these skills. Nevertheless, they highlight that the participants in the focus group have made earnest personal endeavors and have learned a great deal on their own, making the most of their own resources.

Italy: The discussion touched upon digital skills, particularly in reference to the COVID-19 period. The prevailing sentiment is that, following a period where these competencies were crucial and necessitated specific training (sometimes hastily and without assigned scaffolding), participants now perceive a regression in these skills. However, participants also noted that stakeholders view digital skills as lacking in students.
Digital skills appear to create a noticeable "age gap" between younger and senior researchers, according to the perspectives shared during the discussion.

Finland: The group affirmed the significance of all the listed digital competences, considering them integral to any researcher's daily activities. Some underscored the importance of digital literacy, emphasizing the ability to discern valuable content from the vast pool of available information. Additionally, ensuring data safety for users was deemed essential. However, the overarching priority identified was the need for systems to become more accessible, fostering inclusive content for individuals with diverse backgrounds, needs, and aspirations.
The discussion also delved into the anticipated impact of generative AI methods on researchers' workloads and required skillsets. Currently, many of the respondents are leveraging AI for tasks such as creating text for funding applications and generating research ideas. The integration of generative AI methods into existing software is expected to become more prevalent, further influencing the landscape of research work.

6.5. What should a game for young academics contain to help him/her increase the sense of job satisfaction and well-being?

Poland: Individuals reported several characteristics:

1. Marvel style game

2. Solitaire type game
3. Sims type game - when the Sim is the academic, who confronts with various situations connected with workplace - a simulation of real-life game (metaversum)
4. Two paths - a teaching path and the research path. The Researchers could teach paraphrasing, quoting, persuasive writing. Teachers could learn how to prepare teaching materials, practicing public speaking skill - changing registers
5. Strategic games are attractive (decision-making process is important: make a decision and see consequences). In general, it should be a problem-solving game. You have a wife, kids, and a conference paper to prepare.
6. How to prepare an application for funds
7. Interaction with students
8. There should be an alternative "do you want to resign from your work"
9. The game should prepare for the amendments of law
10. How to apply for grants and other projects
11. Meetings - how to survive at meetings, how to acquire the ability to discuss, to inform succinctly and briefly, clearly and precisely,
12. How to read reviews, reply to reviews, and correct papers
13. How to write reviews
14. React to some real-life situations: you start a lecture and students are bored. Make them awake and regain their concentration on the topic you teach.

Spain: Users prefer an asynchronous platform with all skills available, so they can choose the ones they want at their own pace, but with guidance on which skills should be learned first. They envision the skills as independent and concise (no more than 5 minutes), incorporating multimodal content, such as videos and written materials. Additionally, they would appreciate an additional forum for addressing questions and accessing information about university resources.

To provide users with a sense of progress and accomplishment, the platform can offer various types of feedback. To facilitate the acquisition of skills, assessments and tasks can be included. In an asynchronous setting, it is essential to establish deadlines to ensure that individuals adhere to the training.

Greece: The participants think that the three competences of life skills and digital competence are more relevant.

Flexibility, empathy, and critical thinking are vital for PhD students and professors. Adapting to research challenges with flexibility, understanding others' perspectives through empathy, and fostering critical thinking skills empower them to excel in academia. These life skills enhance collaboration, create a supportive learning environment, and ensure credible research outcomes.

Digital competences are essential in the academic world for PhD students and academic professors. They facilitate efficient research practices, global collaboration, and adoption of innovative methods. For professors, digital skills enhance teaching experiences through interactive materials and remote education. Embracing digital competences enriches the academic landscape, enabling seamless communication and access to abundant resources.

The participants acknowledged that their time is limited due to their busy academic schedules; however, they expressed their willingness to invest whatever time and effort they can spare in training and enhancing their competences. Despite the time constraints, they recognize the value of continuous improvement and are eager to develop their skills further. Their commitment to self-improvement reflects their dedication to excel in their roles as PhD students and academic professors, and to make a positive impact in the academic realm.

Italy: The proposal for the game received positive feedback from participants in the focus group, leading the discussion towards the interaction with the learning platform, specifically the MOOC, and the associated effort required. One participant delved into the motivation behind this particular topic, emphasizing the necessity for intrinsic motivation (such as the evident lack of competence in the initial stages of research, for instance, during the PhD period) or the need for obligation to attend these courses, possibly coupled with other rewards (e.g., economic incentives or a reduction in lecturer obligations).

Building on this, the discussion explored the frequency of integrating a game with the MOOC. Participants reached a consensus on the feasibility of playing/studying through an asynchronous platform, enabling access to learning content at any time. The proposed timing for using this platform was once a month. Participants stressed the importance of platform flexibility as a decisive factor for user success and commitment. Some participants expressed a preference for very short video lessons, around 3 minutes each, in the form of video "pills." In these videos, the main emphasis should be on the message.

Additionally, the group requested hands-on moments and the definition of specific exemplary concepts to serve as stimuli for understanding areas of deficiency and improvement. An intriguing element that surfaced was the proposed ratio of 10 minutes of interaction with the platform followed by a minute of feedback to assess the user's acquired knowledge.

The group deliberated the potential establishment of asynchronous training, aligning with GEMMA's objectives, which involves incorporating live, in-person training sessions through a dedicated summer school. This would serve as an intensive training moment for researchers looking to enhance the skills learned and practiced during the online course.

Regarding preferences for skills to be taught, no specific preference was evident among participants; all considered the three areas equally important.

Finland: The group lined out two ideas for a game.

The first one is a dynamic sandbox game designed to guide young academics through various career paths. The players embark on a journey by choosing different academic careers, each mirroring real-world trajectories. The game intricately maps out academic milestones as subgoals, offering a realistic simulation of the challenges and triumphs associated with various professions. The game allows players to explore what-if scenarios within their own academic careers. Users can experiment with different choices, witnessing the potential outcomes and consequences, thereby aiding them in making informed decisions about their real-world academic journey.

The second game focuses on the young researcher’s personal growth and the real-world impact of their research. It allows players to visualize the tangible effects of their academic endeavors on society. The game makes it possible for researchers to connect with others working on similar research topics, fostering a sense of community. As players navigate through the game, they gain insights into the potential benefits of their chosen research directions, not only for themselves but also for humanity. This game would allow academics to explore the broader implications of their work, contributing to a greater understanding of the significance and societal value of their research efforts.

7. Conclusions: GEMMA's integrated framework

The main goal of this chapter was to conduct a review of the literature in order to develop an integrated model for well-being for researchers including three main competences: Entrepreneurial skills, Digital Skills, and Life Skills. In the following sections, we will describe the GEMMA framework targeted for academic teaching (from PhD Students to Full Professors) and research staff (see Figure 12).

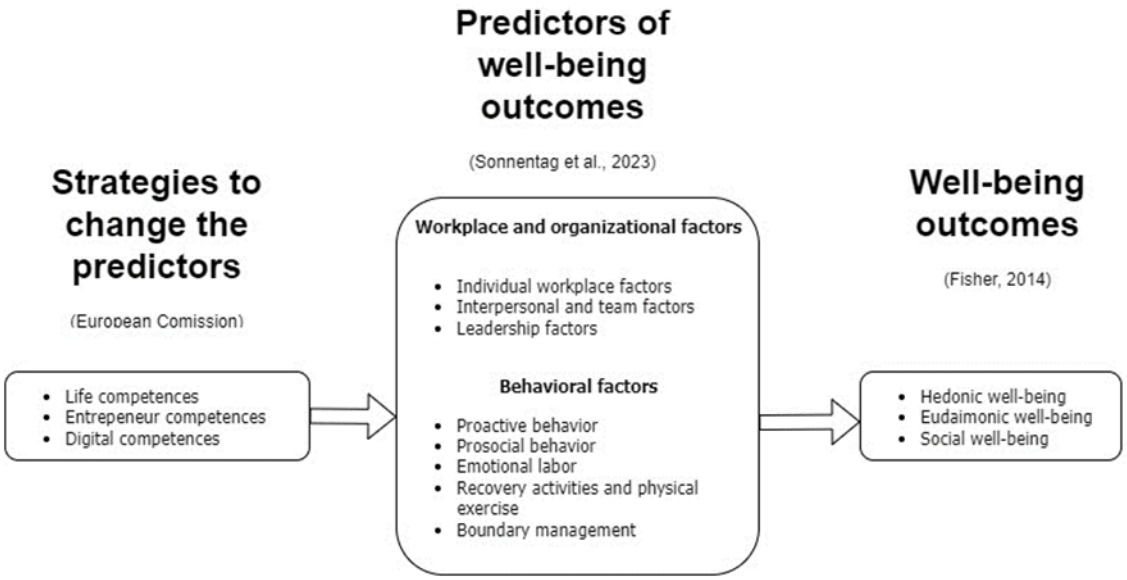


Figure 12. Overview of GEMMA framework

7.1. The specific objectives of the GEMMA training approach.

Employee well-being is a multifaceted concept that can be operationalized from several variety of constructs, such as job satisfaction, dispositional affect, or work engagement (Wijngaards et al., 2021). The *Overall Well-being at Work Model* (Fisher, 2014) is a theoretical model aimed to identify the indicators of well-being at workplace that, in turn, are consistent with the three components that represent the well-being in general (Gallagher et al., 2009):

1. *Subjective well-being at work.* It includes positive attitudinal assessment of work as well as the experience of positive and negative affect. Regarding satisfaction and

related attitudes, *job satisfaction* -which is similar to life satisfaction- refers to workers' cognitive judgement of their workplace experience. Another commonly assessed job attitude involved in the well-being at work is *organizational commitment*, which refers to the degree to which employees resonate with the organization's goals and values (i.e., normative commitment), and/or feel part of the organizational family (i.e., affective commitment).

As regards to *affect*, transient moods or emotions experienced while working are also involved in well-being. On the one hand, positive affect is conceived as the pleasant mood and enthusiasm that arises in workers. A particular construct that contributes to positive affect is *vigor* at work, defined by feelings of physical strength, emotional energy, and cognitive liveliness. On the other hand, negative affect reflects aversive emotional states (e.g., anger, tiredness). Both positive and negative affect can be differentiated according to two dimensions: (1) hedonic tone (i.e., the pleasure), and (2) arousal (i.e., the level of excitation). For instance, work engagement is related to high hedonic tone and high arousal; job satisfaction with high hedonic tone and low arousal; work addiction is correlated with low hedonic tone and high arousal; burnout is associated with low hedonic tone and low arousal; and, finally, happiness is related to high hedonic tone and intermediate levels of arousal.

2. *Eudaimonic well-being at work* includes several constructs that partially overlap with eudaimonic well-being:

- *Job involvement* refers to the individual's identification with work and the degree of basing one's self-esteem in the current work role.
- *Work engagement*, described as a favorable and fulfilling mindset at work. Specifically, this state is characterized by vigor (i.e., emotional energy and cognitive liveness), dedication (i.e., involvement in work activities, and their perception as important significant challenges), and, lastly, absorption (i.e., complete focus in the work tasks, being unaware of the time passing).
- *Thriving at work* refers to the sensation of growth in one's job and making progress toward self-actualization.
- *Flow* at work refers to the pleasant state of being fully absorbed in a challenging task, achieving an uninterrupted rhythm of work.

- *Intrinsic motivation at work* is highly associated with flow construct, characterized by the feeling of pleasure, interest, and enjoyment experienced during work, fulfilling the needs of competence and self-determination.
- *Meaning in work* is a construct that consists of two aspects: "meaning *in* work" (i.e., feeling fulfilled by doing tasks considered important in the workplace) and "meaning *at* work" (i.e., feeling of belonging to the organization, or of a particular group within it). Particularly, the "meaning *at* work" may contribute to social well-being at work, described below.
- *Calling at work* refers to perceiving the inherent meaning in one's job. If vocation involves helping and supporting others, it could also contribute to the social well-being at work.

3. Social well-being at work. This component is described as fostering quality relationships in the workplace, creating a safe and positive work environment (Fisher, 2014). As previously mentioned, social well-being is closely related to eudaimonic well-being, as the maintenance of positive social relationships at work may promote engagement in one's work activity. Fisher (2014) identifies several components that can promote social well-being at work: *satisfying relationships at work,* which includes positive relationships with colleagues and leaders; and *social support,* which refers to given or received support in the work context. This support, that may be emotional or instrumental, has been identified as a predictor of well-being and a buffer against work-related stress. However, the aforementioned constructs do not fully represent the experience of having strong and positive relationships with coworkers. Thus, although other components (e.g., *feeling of belonging* to the organization/particular group at work or the participation in *positive and helpful social gatherings*) have been proposed as relevant to the social well-being at work, further research on the conceptualization of this construct is still needed.

In the case of researchers, a combination of the three dimensions should be considered as the "outcome variable" (i.e., *What do we want to achieve with GEMMA project?*). To do this, several measures may be useful to have a reliable measure of well-being at work. In this regard, it should be noticed that context-free measures of well-being may not adequately reflect organizational realities (Bartels et al., 2019). In fact, work is a domain of life that differs from other domains such as leisure, friends and family; that

is, the workplace involves specific parameters that lead to unique experiences for individuals. Consequently, measures of well-being related to work should be taken into account. We present several measurements that can be useful to operationalize the indicators of well-being:

1. *The Daniels five-factor measure of affective well-being (D-FAW)* (Russell & Daniels, 2018). This is a 10-items scale that measures affective well-being, including the following items: happy, at ease, anxious, annoyed, motivated, calm, tired, bored, gloomy, and active. Individuals should "indicate to what extent you feel this way right now, that is, at the present moment, in general or in the past week". The items are scored on a Likert scale, ranging from 1(not at all) to 6 (very much). A total score of hedonic well-being is calculated. The scale has shown adequate reliability and validity.
2. *The Psychological well-being at work (PWBW) (Dagenais-Desmerais & Savoie, 2011).* This is composed of 5 dimensions of psychological well-being: (1) *Interpersonal Fit at Work* (i.e., Perception of experiencing positive relationships with individuals interacting with oneself within the work context), (2) *Thriving at Work* (i.e., Perception of accomplishing a significant and interesting job that allows one to fulfill oneself as an individual), (3) *Feeling of Competency at Work* (i.e., Perception of possessing the necessary aptitudes to do one's job efficiently and have mastery of the tasks to perform), (4) *Desire for Involvement at Work* (i.e., Will to involve oneself in the organization and to contribute to its good functioning and success), and (5) *Perceived Recognition at Work* (i.e., Perception of being appreciated within the organization for one's work and one's personhood). Employees have to answer 25 items considering how they felt at work over the past 4 weeks, using a scale ranging from 0 (disagree) to 5 (completely agree). Scores by dimension and/or total score may be used. Dimensional or total scores are obtained by averaging the scores for dimensional or total questionnaire items.
3. *The Work Well-being Questionnaire (Parker & Hyett, 2011).* This a 31-item that scale is composed of 4 domains measuring the levels of support and well-being provided by the organization: (1) *Work Satisfaction* (i.e., judgments of the extent to which they viewed their work as fulfilling and whether their work increased their sense of self-worth, provided life with some purpose and meaning, and

advanced their skills), (2) *Organizational Respect for the Employee* (i.e., respondent judged senior organization representatives as trustworthy, as having ethical values, and as valuing staff and treating them well), (3) *Employee Care* (i.e., judgments of the boss: whether he or she was caring, willing to lend an ear, and understanding about work concerns and treated the employees as they sought), and (4) *Intrusion of Work into Private Life* (i.e., whether the individual felt stressed and pressured at work to meet the targets, found it hard to ‘‘wind down’’ after work, and judged that work ate into their private life and whether the work impacted on their self-esteem). The participants were asked to rate the items that best represented their current and most relevant work situation on a 5-point scale (0 = not at all; 4 = extremely true).

4. *Employee well-being in organizations questionnaire (EWB) (Zheng et al., 2015).* This is a 18-items scale composed of 3 dimensions, in which two are related to hedonic and eudaimonic well-being in general, and one dimension focused on measuring hedonic and eudaimonic well-being at the workplace: (1) *life well-being* (“I feel satisfied with my life”), (2) *workplace well-being* (“I’m satisfied with my work responsibilities”, “Work is meaningful experience for me”), and (3) *psychological well-being* (“I feel I have grown as a person).

To achieve high levels in these well-being indicators, Sonnentag et al. (2023) conducted a systematic review to identify the mechanisms or predictors of well-being (i.e., *What do we want to change in researchers to increase well-being?*) (see Table 1). To do so, they analyzed the interpersonal environment, off-job experiences, and employees’ behaviors. In the following points, the main findings regarding the *individual workplace’s factors* associated with well-being found by Sonnentag et al. (2023) are summarized:

1. *Individual factors.* This refers to the resources and demands that individuals encounter at work. Its protective factors have been related to *job resources*, such as autonomy (i.e., job control), learning opportunities, and task variety. On the contrary, the risk factor that prevent the experience of physical health and well-being are *challenge stressors* (e.g., workload and time pressure) and *hindrance stressors* (e.g., hassles, role conflict or ambiguity), being especially important the latter one the most relevant to predict the long-term impairment.

2. *Interpersonal and teamwork factors.* This is referred to the interpersonal environment. On the one hand, the protective factors have been related to the *social support* -including instrumental (e.g., help with work tasks) and emotional (e.g., appreciation and warmth) aspects-, the *social identification* with their group and organization, and *working in a team* (vs. working alone). On the other hand, the risk factors are associated with *interpersonal conflicts, harassment, incivility* (i.e., low-intensity deviant behavior with ambiguous intent to harm, violating the norms for mutual respect), and *ostracism* (i.e., perception of being ignored or excluded by others).
3. *Leadership factors.* The protective factors have shifted from behaviors described in leadership theories (e.g., transformational leadership, task-oriented leadership, change-oriented leadership, ethics-oriented leadership, and leader-member exchange) to more *specific behaviors by which leaders can impact employee health and well-being* (e.g., by acting as role models for health awareness and health behavior and by emphasizing good work-life balance). However, there are risk factors for well-being that come from the leadership dimension, such as *abusive supervision* and forms of destructive leadership.

In addition to individual workplace factors, there are *individual behaviors* that affect physical health and well-being. These factors are highly relevant, as they are shown as active agents involved in their job conditions. For instance, in the past, job control was primarily considered as an inherent characteristic of the job; however, contemporary perspectives recognize that employees can proactively acquire job control through practices, such as job crafting. These individuals factor identified as promoters of well-being are:

1. *Proactive behavior*, which refers to the different behaviors that employees do to influence their own work context. This includes job-crafting (i.e., proactive strategies involve making intentional changes to the characteristics of one's job to better align the job with personal needs, goals, and skills) or voice behaviors (e,g., communication of ideas to propose improvement ideas to solve existing problems in their organizational work modes or processes with the aim of improving organizational performance).
2. *Prosocial behavior,* which refers to engaging with others at work (e.g., showin an adequate organizational citizenship behavior, providing support).

3. *Emotional labor,* in which individuals manage their emotional processes using their emotion regulation.
4. *Recovery activities at work (e.g., taking breaks) and physical exercise (e.g., engaging in social activities, pursuing hobbies).*
5. *Boundary management between work and private life.* Employees can actively take care of this balance by reducing the use of technology at home. Moreover, as it is bidirectional, enhancing well-being at home can impact on the well-being at work.

Table 1. Overview of the protective and risk factors of well-being according to Sonnentag et al. (2023).

SPECIFIC PROTECTIVE FACTORS OF WELL-BEING	**GENERAL PREDICTOR FACTORS OF WELL-BEING**	SPECIFIC RISK FACTORS OF WELL-BEING
Job resources (e.g., autonomy, learning opportunities, and task variety)	**INDIVIDUAL FACTORS OF THE WORKPLACE**	Challenge stressors (e.g., workload and time pressure) and hindrance stressors (e.g., hassles, role conflict or ambiguity).
Social support, the social identification with their group and organization, and working in a team (vs. working alone).	**INTERPERSONAL AND TEAMWORK FACTORS**	Interpersonal conflicts, harassment, incivility and ostracism.
Specific behaviors by which leaders can impact employee health and well-being (e.g., models for health awareness)	**LEADERSHIP FACTOR**	Abusive supervision.
Job-crafting and voice behaviors	**PROACTIVE BEHAVIOR**	-
Engaging with others at work (e.g., giving organizational citizenship behavior, providing support).	**PROSOCIAL BEHAVIOR**	-
Good skills in emotion regulation.	**EMOTIONAL LABOR**	
Taking breaks, engaging in social activities, pursuing hobbies	**RECOVERY ACTIVITIES AT WORK AND PHYSICAL EXERCISE**	
Reducing the use of technology at home	**BOUNDARY MANAGEMENT BETWEEN WORK AND PRIVATE LIFE**	

The aim of GEMMA will be to modify the predictors of well-being through the competences established in the framework of the European Commission. However, as there is little research on the well-being of researchers in this context, and with the objective to identify the needs of the researchers, several focus groups were conducted in Italy, Finland, Poland, Greece and Spain.

7.2. The needs of the researchers about the balance between work and personal life.

Overall, researchers defined well-being considering the tridimensional dimensions highlighted by Fisher (2014): subjective (e.g., “feeling satisfied”,

"happiness"), eudaimonic (i.e., "task aligned with the own values", "progress and growth") and social well-being (e.g., "good atmosphere" and "feeling appreciated"). Moreover, we found variability in the levels of satisfaction in the researchers.

Overall, researchers find it difficult to achieve a balance between their personal and professional lives. The lack of boundaries at home, unexpected tasks, mental overload and career instability were the main problems preventing a good balance at work.

Regarding the ***protective factors*** predicting high well-being, researchers highlighted:

- *Individual factors of the workplace*: task aligned with the own values, academic freedom, variety on the tasks, work challenges, new learning and training opportunities, job as giving meaning to their life and social appreciation, adequate resources to access to equipment, possibility of professional travel, materials and collaborators, adequate ergonomics, knowing the exact rights and duties, possibility of involving families in external work-related activities, freedom to decide how to do something and what to do, adequate financial compensation, participation in scientific conferences, and the possibility of supervising and mentoring doctoral candidates.
- *The teamwork factors*: feeling part of the group and building new relationships.
- *The leadership factors*: clear rules, work environment promoting the work-life balance and encouraging researchers to have a healthy personal life, having supervisors being sensitive to researchers' needs, having supervisors providing appropriate support and guidance, and having supervisors appreciating the work of the employees.
- *Proactive behavior:* having intrinsic motivation, having the challenge to develop new skills and competencies, and being assertive.
- *Prosocial behavior:* having the sense of being needed by others.
- *Recovery activities*: taking personal time during and after work.
- *Setting boundaries between work and life*: establishing healthy work rhythms and time management, setting balanced priorities between work and personal life, and setting clear boundaries,
- Emotional labor: adequate management of the stress.

Regarding the ***risk factors*** predicting low well-being, researchers highlighted:

- *Individual factors of the workplace*: excessive administrative demands, being "multitasking", not being able to focus on research, constant amendments of legal regulations, unexpected tasks, mental overload, instability of the academic career, lack of possibilities provided by the institution to flourish at work, insufficient funding, constant need to publish, and performing unpaid research work, lack of access to relevant resources, and lack of information about opportunities.
- *Teamwork factors*: bad atmosphere and mobbing.
- *Leadership factors*: having supervisors with excessive expectations over employees, having supervisors overburdening the employees with additional tasks (not connected with teaching and research) and feeling evaluated and controlled with parametrization of scholarly work).
- *Difficulties in setting boundaries between work and life*: having excessive family obligations.
- *Emotion regulation issues*: the frustration about the fact that an "end product" is not immediate and the lack of time to complete all of the required tasks, experiencing stress.

When discussing the *competences* that are useful for increasing well-being, researchers highlighted the following competences:

A. Digital skills (see section 4.1.1 of the document entitled "The integrated framework of GEMMA project: Increasing well-being in researchers through digital, life and entrepreneurial competences" for more information)

A1. Information and data literacy

- Browsing, searching, and filtering data information and digital content (e.g., "Information retrieval", "the ability to seek for information and data, in the vast and constantly growing Internet resources, is a must for every researcher", "to choose verified and non-verified information and data resources", "to use technology critically and effectively for educational progress").
- Evaluating data, information, and digital content (e.g., "to use technology critically and effectively for their educational progress", "the ability to discern valuable content from the vast pool of available information").

- Managing data, information, and digital content (e.g., "Information gathering", "information storing", "information processing", "having retrieved the necessary data, researchers need to gather it and store it adequately").

A2. Communication and collaboration

- Interacting through digital technologies (e.g., "distant teaching and learning skills").
- Sharing through digital technologies (e.g., "to support the professional development through digital resources and educational programs").
- Collaborating through digital technologies (e.g., "simultaneous use of multiple resources and platforms can potentially affect well-being negatively", "to collaborate with colleagues and other professionals from a distance")

  * They did not mention the competences "Engaging in citizenship through digital technologies", "Netiquette", or "Managing digital identity".

A3. Digital content creation

- Developing digital content (e.g., "to use technology to support education, learning, and assessment of educational activities").
- Integrating and re-elaborating digital content (e.g., "to use technology to support education, learning, and assessment of educational activities").
- Copyright and licenses (e.g., "afraid of infringing copyrights of others/their", "the new ghost writing, anti-plagiarism, anti-autoplagiarism policies of journals and publishing houses also decrease the well-being of scholars. Academics feel oppressed with the need to scrutinize previous research on the discussed topic on the one hand, and the necessity to do it in a different manner than previously done on the other hand"; "The recent new development of AI tools such as ChatGPT and lack of clear rules concerning its usage are expected to affect the well-being of researchers as well. Though at the stage of conducting the surveys many researchers were unaware of its capabilities and the future impact on their jobs").

  * They did not mention the competence "Programming".

A4. Safety

- Protecting devices (e.g., "research data protection").

- Protecting personal data and privacy (e.g., “personal data collection”, “ensuring data safety for users was deemed essential”, “need for systems to become more accessible, fostering inclusive content for individuals with diverse backgrounds, needs, and aspirations”).
- Protecting health and well-being (e.g., “excessive technology use can lead to fatigue”, “learning how to leverage technology for self-care”).
- Protecting the environment” (e.g., “essential to raise awareness of the environmental impact associated with the use of technology”).

A5. Problem solving

- Creatively using digital technologies (e.g., "use technology to support education, learning, and assessment of educational activities", “leveraging AI for tasks such as creating text for generating research ideas”)
- Identifying digital competence gaps (e.g., “Digital skills appear to create a noticeable "age gap" between younger and senior researchers, according to the perspectives shared during the discussion”).

  * They did not mention the competences “Solving technical problems” and “Identifying needs and technological responses”.

B. Life competences (see section 4.2.1 of the document entitled “The integrated framework of GEMMA project: Increasing well-being in researchers through digital, life and entrepreneurial competences” for more information)

B1. Personal area

- Self-regulation (e.g., “self-confidence”, “emotional competence”, “stress resilience”, “copying with stress”, “regulating one's own emotions”).
- Flexibility (e.g., “to be able to adapt or add new skills”, “the ability to adapt quickly and effectively to new situations and challenges is crucial for successfully facing difficulties and achieving well-being and success”).
- Pursuit of well-being through adoption of a sustainable lifestyle (e.g., “to achieve a balance between work and family”).

B2. Social area

- Collaboration (e.g., “to have effective communication and collaboration throughout all stages of their careers”)

- Empathy (e.g., "empathy and self-regulation are also crucial because they contribute to increased flexibility", "the need to develop strong emotional connections with others and increases our social support and sensitivity to their needs")
- Communication (e.g., "assertiveness", "setting boundaries", "effective communication not only towards others but also towards oneself").

B3. Learning to learn

- Growth mindset (e.g., "continuous improvement", "looking towards the future and seeking continuous improvement is something that can and should be cultivated", "growth mindset may be particularly relevant at the beginning of one's career").
- Critical thinking (e.g., "to analyze information, solve problems and make sound decisions").

  * They did not mention the competence related to "managing learning".

C. Entrepreneur competences (see section 4.3.1 of the document entitled "The integrated framework of GEMMA project: Increasing well-being in researchers through digital, life and entrepreneurial competences" for more information)

C1. Ideas and opportunities

- Spotting opportunities (e.g., "to start emerging opportunities for the entrepreneurship through agencies and handling the business side tasks", "the institution does not provide any opportunities to improve entrepreneurship skills", "there is a lack of training on entrepreneurial skills throughout the university path… so there is a need of spotting opportunities to foster these competences")
- Creativity (e.g., "this approach allows researchers to concentrate on marketing their unique skills and knowledge").
- Vision (e.g., "learning how to organize one's work effectively for potential commercialization").

  * They did not mention the competences "valuing ideas" or "ethical and sustainable thinking".

B2. Into Action

- Taking the initiative (e.g., "capacity for accepting challenges").
- Planning and management (e.g., "setting clear goals").
- Coping with uncertainty (e.g., "being able to cope with uncertainty, ambiguity and risk").
- Working with others (e.g., "work with others and fostering connections with others").
- Learning through experience (e.g., "promoting activities as a chance to learn").

B3. Resource acquisition

- Self-awareness and self-efficacy.
- Motivation and perseverance with established goals.
- Mobilizing resources and mobilizing others (e.g., "senior professionals may require additional skills related to resource acquisition").

  * They did not mention the competence "financial and economic literacy".

Regarding the type of *learning interventions* that they would like to receive, they highlighted that they should be aimed at learning skills and acquiring resources associated with their tasks at work (e.g., preparing applications for soliciting funds, reading and writing reviews, acquiring digital competencies to efficient and innovative research practices, more information about university resources), and interpersonal interactions (e.g., interaction with students, interactions of real-life situations). Participants especially highlighted the role of all the competences, but specially, digital and life competences.

Regarding the characteristics of the intervention, researchers expressed the following preferences:

- *Platform*: an asynchronous platform with a list of available materials on all the skills to be trained, guiding them on the advisable skills for their case, allowing them to select these contents and to pace their progress as needed.
- *Contents*: The process of learning each skill should be independent and provide multimodal contents such as video and written materials.
- *Assistance and additional information*: a forum for doubts and access to information regarding the universities' resources would be appreciated.
- *Feedback*: preference to obtain feedback in order to gain perspective on their progress and achievement. In a focus group, it was proposed the following ratio:

ratio of 10 minutes of interaction with the platform followed by a minute of feedback to assess the user's acquired knowledge.

- *Tasks*: Assignments and evaluation tasks may be used to facilitate the skill acquisition
- *Timeline*: The learning process should be brief (i.e., less than three or five minutes a day, in the form of video "pills") and deadlines is the assignments were required.

Importantly, participants emphasized the importance of all skills, however they also noted that not every skill is universally needed and that the need for specific skills may vary according to individual profiles.

Moreover, they provided information about how to develop a serious game, giving this following information:

- A virtual scenario or a simulation of real-life game (e.g., metaverse), in which the researcher confronts various situations connected with the workplace.
- Strategic games involving decision-making processes (i.e., making a decision and seeing consequences). In general, they requested a problem-solving game, and they gave the following examples of scenarios:
    - How to cope with having a partner, children and an urgent article to write.
    - How to conduct appropriate interactions with students (e.g., you start a lecture and the students are bored, and you have to wake them up and regain their concentration on the topic you are teaching).
    - How to survive in meetings, how to acquire the ability to discuss, to report succinctly and briefly, clearly and accurately.

7.3. The skills to be taught in GEMMA.

Once we have identified the outcomes and the predictors of well-being at work, as well as the needs of the researchers, the question is "*How can we increase the predictors of well-being?"*. One of the possibilities is to use individual-level well-being interventions to promote personal resources and capacities (Tetrick & Winslow, 2015). In this regard, learning interventions, that include training programs focused on developing competencies or resources to meet work demands (Jacobs & Park, 2009) may be key to foster sustainable well-being not only in the employees (Duckworth & Cara, 2012) but also having a positive effect on the organizational-level well-being.

In this regard, the digital, life, and entrepreneurship competencies frameworks may constitute a list of valuable personal resources that individuals can use to foster their well-being at work. In the table 2, we relate the predictor variables of well-being identified by Sonnentag et al. (2023) and the hypothesized competence to change the predictor variable (considering the information in the literature and in the focus group).

Table 2. Relationship between competences and predictor variables of well-being

Predictor variables of well-being *(based on Sonnentag et al., 2023)*	**Hypothesized competence to change the predictor variable**
1. Individual factors of the workplace (the resources and demands that individuals encounter at work.	This factor cannot be modified by competences because it refers to factors related to the workplace, i.e. the resources and demands that individuals encounter at work (e.g. job resources in terms of autonomy, learning opportunities and task variety). We therefore assume that it cannot be modified by the individual.
2. Interpersonal factors of the workplace: referred to the interpersonal environment.	This factor cannot be modified by competences because it refers to factors related to the workplace, i.e. the interpersonal environment (e.g. emotional and instrumental social support, working in a team). We therefore assume that it cannot be modified by the individual.
3. Leadership factors of the workplace (e.g., modelling health and well-being in the employees, adequate practices of leadership)	This factor is also related to the workplace, but can be modified by the competences of the supervisors. We therefore propose the following competences as predictor variables. Digital competences: - *Communication and collaboration:* Interacting through technologies, engaging in citizenship through digital technologies, and collaborating through digital technologies. - *Safety*: Protecting health and well-being, and identifying digital gaps. Life competences: - *Personal area:* Self-regulation, flexibility and Pursuit of well-being. - *Social area:* Empathy, Communication, and Collaboration. - *Learning to learn:* Growth mindset. Entrepreneurship competences:

	- *Ideas and opportunities:* Spotting opportunities, creativity, vision, valuing ideas and ethical and sustainable thinking. - *Into action:* Taking the initiative, planning and management, working with others, and learning through experience. - *Resources:* Self-awareness and self-efficacy, Motivation and perseverance, Mobilizing resources, and Mobilizing others.
4. Proactive behavior by the employee: the different behaviors that employees do to influence their own work context (e.g., job crafting and voice behaviors)	This factor is individual - and therefore modifiable. To select the competences, we took into account the needs of the researchers in relation to the individual workplace factors and the proactive behaviors they identified as being associated with well-being. *Digital competences:* - *Information and data literacy:* Browsing, searching, and filtering data information and digital content, and Evaluating data, information, and digital content. - *Digital content creation:* Integrating and re-elaborating digital content, copyright and licenses. - *Safety*: Protecting devices, protecting personal data and privacy. - *Problem solving:* Creatively using digital technologies and Identifying digital competence gaps. *Life competences:* - *Personal area:* Self-regulation, flexibility, and pursuit of well-being. - *Social area*: Communication. - *Learning to learn:* Growth mindset, Critical thinking, and Managing learning. *Entrepreneurship competences:* - *Ideas and opportunities:* Spotting opportunities, creativity, vision, and sustainable thinking. - *Into action:* Taking the initiative, planning and management, and learning through experience. - *Resource acquisition:* Self-awareness and self-efficacy, motivation and perseverance, and mobilizing resources and mobilizing others.
5. Prosocial behavior by the employee: to engage	This factor is individual - and therefore modifiable. To select the competences, we took into account the needs of

with others at work (e.g., providing support, giving organizational citizenship behavior)	the researchers in relation to the interpersonal workplace factors and prosocial behaviors they identified as being associated with well-being. *Digital competences:* - *Communication and collaboration:* Interacting through digital technologies, Sharing through digital technologies, Collaborating through digital technologies, Netiquette, and Managing digital identity. *Life competences:* - *Social area:* Empathy, Assertiveness, Communication, and Collaboration. *Entrepreneurship competences:* - *Into action: Working* with others.
6. Adequate emotion regulation of the employee	*Digital competences:* - *Communication and collaboration:* Managing digital identity. - *Safety:* Protecting personal data and privacy and protecting health and well-being. *Life competences:* - *Personal area:* Self-regulation, assertiveness, flexibility, and pursuit of well-being. *Entrepreneurship competences:* - *Into action:* Coping with uncertainty. - *Resources:* Self-awareness and self-efficacy.
7. Recovery activities at work and outside the work	*Digital competences:* - *Communication and collaboration:* Managing digital identity. - *Safety:* Protecting personal data and privacy and protecting health and well-being. *Life competences:* - *Personal area:* Self-regulation, flexibility, and pursuit of well-being. *Entrepreneurship competences:* - *Into action:* Planning and management.
8. Setting boundaries between work and private life	*Digital competences:* - *Communication and collaboration:* Interacting through digital technologies, and Managing digital identity. - *Safety:* Protecting personal data and privacy and protecting health and well-being. *Life competences:*

	- *Personal area:* Self-regulation, flexibility, and pursuit of well-being. *Entrepreneurship competences:* - *Into action:* Planning and management.

7.4.Pedagogical approaches and strategies to be employed in GEMMA.

To carry out the teaching of the competences, a MOOC will be developed. The MOOC (Massive Online Open Course) is an online platform for teaching that guarantees a structured learning path, scalable and accessible to everyone. The GEMMA's MOOC will contain a syllabus and explicit teaching objectives, learning materials and activities, an evaluation system based on quizzes, exercises, and a certification process.

The MOOC will consist of 6 lessons, including 2 modules for each lesson. According to the literature review and the needs identified in the focus groups, the structure of the syllabus is:

Introduction: The GEMMA project and its aims. (led by UNIBA)
Lesson 1. The importance of well-being in the workplace (led by UVEG)
Module 1.1. Definition of well-being
Module 2.1. Models of well-being
Lesson 2. Overview of the GEMMA framework (led by UVEG)
Module 2.1. Predictors and outcomes of well-being
Module 2.2. Why learning life, entrepreneur and digital skills?
Lesson 3. Life competences and well-being. (led by IASIS)
Module 3.1. The LifeComp framework
Module 3.2. The effects of life competences on well-being.
Lesson 4. Digital competences and well-being. (led by AMU)
Module 4.1. The DigComp framework
Module 4.2. The effects of digital competences on well-being.
Lesson 5. Entrepreneurial competences and well-being. (led by UTU)
Module 5.1. The EntreComp framework
Module 5.2. The effects of Entrepreneurial competences on well-being.
Lesson 6. Putting in action the competences (led by SGF)
Module 6.1. Potential of the serious games in education
Module 6.2. How to use GEMMA serious game

Two videos per module (i.e. 4 videos per lesson) of 5 minutes each (20 minutes per module) should be created. In addition, 10 multiple choice questions (3 alternatives or T/F questions) should be created at the end of each lesson. Each video will be created using PowerPoint with the same template and recorded using voice software (e.g., Voicemaker). The transcript of the videorecording should be included in a Word document so that subtitles can be added to the recording.

Each lesson should include an introduction to the lesson through a 2-minute audio/video presentation recorded by the partner responsible for each lesson. The whole MOOC will be translated into Italian, Polish, Greek, Finnish, and Spanish.

7.5. The embedding of the serious game inside the GEMMA training program

The serious game will be a computerized game aimed at putting into practice the contents learnt in the MOOC. The game will be available through mobile devices. This will exploit the results gathered by the project, enlarging the potential users, as some players could be attracted to the e-learning platform after playing with the serious game play. The game will be able to be integrated inside the MOOC representing the practical activity of the course, the part where the users could apply in an experiential mode and with **practical activities** the concepts and the information learned during the MOOC.

In addition, the serious game could also act as an independent tool. A game–based learning includes learning methodologies, that fosters individual engagement and provides challenges that motivate the achievement of learning goals. In fact, effective serious games may foster the development of multiple personal skills (Susi et al., 2007) and achievement motivation (Ahrens, 2015). Thus, players could improve their cognitive (Locke, 1991; Bandura, 1986), emotional (McGonigal, 2011), and social skills (Squire, 2006). Research has shown how an educational game could help in motivating users and promoting their learning.

The GEMMA's serious game will be used through a week, from Monday till Saturday. For this reason, it will contain 6 scenarios. Each scenario will be aimed at working on one predictor of well-being[1]:

- **Scenario 1.** Setting boundaries between work and private life (lead by SGF)
- **Scenario 2.** Leadership factors of the workplace (e.g., modeling health and well-being in the employees, adequate practices of leadership) (lead by UVEG)
- **Scenario 3.** Proactive behavior by the employee: the different behaviors that employees do to influence their own work context (e.g., job crafting and voice behaviors) (IASIS)
- **Scenario 4.** Prosocial behavior by the employee: to engage with others at work (e.g., providing support, giving organizational citizenship behavior) (lead by UNIBA)
- **Scenario 5.** Adequate emotion regulation of the employee (lead by AMU)
- **Scenario 6.** Recovery activities at work and outside the work (lead by UTU)

In each scenario, at least 3 competences will be worked on (i.e., 1 life competence, 1 digital competence, and 1 entrepreneurial competence). However, if more can be included, more will be included. Each scenario has 5 steps, with 5 interaction/decision that the player must take to maintain the well-being indicators higher as much as possible. When giving feedback, users should realize which competence they have had to use in order to increase their well-being. The ultimate goal in each scenario will be to be aware about well-being in 3 of the well-being dimensions (see section 3.2.1 for more information):

- Hedonic (e.g., "I find real enjoyment in my work", "I am satisfied with my work responsibilities and work achievements").
- Eudaimonic (e.g., "I can always find ways to enrich my work", "Work is a meaningful experience for me")
- Social well-being (e.g., "I enjoy working with people at my work", "I Value the people I work with", "I get along well with the people at my job").

[1] For developing each scenario, the partner in charge of each scenario should read the sections 3.2.8, 4.1.1, 4.2.1, and 4.3.1, as well as sections 7.1, 7.2 and 7.3 and Table 2 of the current document).

At the beginning of each day, the game will ask to take care of one or two of the three dimensions. In this way, the player will bring the decision on the basis of the initial goal randomly set by the system.

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Annex I

Personal data of focus group members in Poland:

Member 1

Age: 60

Gender: male

Nationality: Korean

Language spoken: Korean, Polish

Position: University Professor

University: Adam Mickiewicz University

City: Poznań, Poland

Department: Department of Oriental Studies

Number of years working at the University: 20

Research area: humanities

Member 2

Age: 41

Gender: female

Nationality: Polish

Language spoken: Polish, Korean

Position: Assistant Professor

University: Adam Mickiewicz University

City: Poznań, Poland

Department: Department of Oriental Studies

Number of years working at the University: 14

Research area: humanities

Member 3

Age: 72

Gender: female

Nationality: Polish

Language spoken: Polish, German

Position: Professor

University: Adam Mickiewicz University

City: Poznań, Poland

Department: Institute of Applied Linguistics

Number of years working at the University: 49

Research area: humanities

Member 4

Age: 34

Gender: female

Nationality: Polish

Language spoken: Polish, English

Position: Assistant Professor

University: Adam Mickiewicz University, The Ignacy Jan Paderewski Academy of Music

City: Poznań, Poland

Department: Institute of Applied Linguistics

Number of years working at the University: 10

Research area: humanities

Member 5

Age: 48

Gender: female

Nationality: Polish

Language spoken: Polish, English

Position: Senior Lecturer

University: The Ignacy Jan Paderewski Academy of Music, WSB Merito University in Poznan

City: Poznań, Poland

Department: Foreign Language Department

Number of years working at the University: 23

Research area: humanities

Member 6

Age: 39

Gender: male

Nationality: Polish

Language spoken: Polish, English

Position: Senior Lecturer / Assistant Professor

University: The University of Commerce and Services (WSHIU) in Poznań, Adam Mickiewicz University in Poznań

City: Poznań, Poland

Department: Institute of Applied Linguistics

Number of years working at the University: 14

Research area: humanities

Member 7

Age: 59

Gender: male

Nationality: Polish

Language spoken: Polish, German

Position: Senior Lecturer

University: Poznań School of Logistics

City: Poznań

Department: Logistics

Number of years working at the University: 15

Research area: technology and humanities

Member 8

Age: 47

Gender: male

Nationality: Polish

Language spoken: Polish, English

Position: Assistant Professor

University: University of Technology

City: Poznań

Department: Business

Number of years working at the University: 15

Research area: IT, Economics

Personal data of focus group members in Spain:

Name and surname: ACM

Age: 45

Gender: male

Nationality: Spanish

Position: Senior Lecturer

University: Universitat de València

City: Valencia

Department: Department of Personality

Number of years working at the University: 20

Research area: Health

Name and surname: GB

Age: 42

Gender: female

Nationality: Spanish

Position: Associate Professor

University: CEU Cardenal Herrero

City: Burjassot

Department: Physiotherapy

Number of years working at the University: 15

Research area: Health

Name and surname: AMM

Age: 44

Gender: male

Nationality: Spanish

Position: Senior Researcher

University: University of València

City: Valencia

Department: IPl (Image Processing Laboratory)

Number of years working at the University: 16

Research area: Science

Name and surname: AOG

Age: 55

Gender: female

Nationality: Spanish

Position: Full Professor

University: University of València

City: Valencia

Department: Methodology

Number of years working at the University: 28

Research area: Health

Name and surname: DB

Age: 29

Gender: female

Nationality: Ukrainian

Position: Postdoc junior

University: University of València

City: Valencia

Department: Personality

Number of years working at the University: 4

Research area: Health

Name and surname: AF

Age: 40

Gender: male

Nationality: Spanish

Position: Predoctoral student

University: University Politecnic of València

City: Valencia

Department: Instituto ITACA - Grupo SABIEN

Number of years working at the University: 15

Research area: Technology

Name and surname: SMG

Age: 26

Gender: female

Nationality: Spanish

Position: Predoctoral student

University: University of València

City: Valencia

Department: Methodology

Number of years working at the University: 4

Research area: Health

Name and surname: AJD

Age: 29

Gender: female

Nationality: Spanish

Position: Predoctoral student

University: University of València

City: Valencia

Department: Personality

Number of years working at the University: 3

Research area: Health

Name and surname: MW

Age: 40

Gender: female

Nationality: Spanish

Position: Assistance Professor

University: University of València

City: Valencia

Department: Personality

Number of years working at the University: 14

Research area: Health

Personal data of focus group members in Greece:

Name and surname (initials of the name): MX, KP, DL, KA, EP, IR, AS, EG

Age: mean 45

Nationality: Greek

Position: PhD Candidates and Professors

University: Panteion University of Political and Social Sciences

City: Athens

Department: Psychology

Number of years working at the University: mean 2 years

Research area: Positive Psychology

Personal data of focus group members in Italy:

Name and surname: AV

Gender: Male

Nationality: Italian

Position: Associate Professor

University: University of Bari Aldo Moro

Department: Pharmacy

Number of years working at the University: 25

Research area: Biochemistry

Name and surname: CA

Gender: Female

Nationality: Italian

Position: Full Professor

University: University of Roma Tre

Department: Education

Number of years working at the University: 17

Research area: Education

Name and surname: MP

Gender: Female

Nationality: Italian

Position: PhD Student

University: University of Foggia

Department: Humanities

Number of years working at the University: 1

Research area: Education

Name and surname: MC

Gender: Male

Nationality: Italian

Position: PhD Student

University: University of Bari Aldo Moro

Department: Education, Psychology and Communication

Number of years working at the University: 3

Research area: Education

Name and surname: MP

Gender: Female

Nationality: Italian

Position: PhD Student

University: University of Naples Federico II

Department: Humanities

Number of years working at the University: 20

Research area: Psychology

Name and surname: RM

Gender: Female

Nationality: Italian

Position: PhD Student

University: University of Bari

Department: Education, Psychology and Communication

Number of years working at the University: ù2

Research area: Education

Name and surname: IA

Gender: Female

Nationality: Italian

Position: Researcher

University: University of Bari

Department: Education, Psychology and Communication

Number of years working at the University: 10

Research area: Education

Name and surname: AL

Gender: Female

Nationality: Italian

Position: Associate Professor

University: University Online Giustino Fortunato - Benevento

Department: Physics

Number of years working at the University: 33

Research area: Physics

Personal data of focus group members in Finland

Member 1

Name and surname: KS

Age: 46

Gender: male

Nationality: Finnish

Language spoken: Finnish, Swedish, English, French

Position: Project Manager

University: University of Turku

City: Turku

Department: Computing

Number of years working at the University: 20

Research area: Technology

Member 2

Name and surname: SL

Age: 33

Gender: Male

Nationality: Finnish

Language spoken: Finnish, English, Swedish

Position: Postdoctoral researcher

University: Tampere University

City: Tampere

Department: Faculty of Information Technology and Communication Studies

Number of years working at the University: 8 years

Research area: Humanities, Technology

Member 3

Name and surname: TS

Age:49

Gender: male

Nationality: Finnish

Language spoken: Finnish, Swedish, English

Position: Postdoctoral researcher

University: University of Turku

City: Turku

Department: Department of Computing

Number of years working at the University: 20

Research area: Technology

Member 4

Name and surname: NS

Age: 39

Gender: Female

Nationality: Finnish, Serbian

Language spoken: English, Finnish Serbian, Montenegrian, Croatian, Bosnian

Position: Doctoral student and teacher

University: University of Turku

City: Turku

Department: Department of Computing

Number of years working at the University: 13

Research area: Arts, Technology

Member 5

Name and surname: PS

Age: 38

Gender: Male

Nationality: Finnish

Language spoken: Swedish, Finnish, English

Position: Post-doctoral researcher

University: Åbo Akademi University

City: Turku

Department: English department

Number of years working at the University: 10

Research area: Arts

Member 6

Name and surname: TJ

Age: 46

Gender: Male

Nationality: Finnish

Language spoken: Finnish, English

Position: University Teacher

University: University of Turku

City: Turku

Department: Department of Computing

Number of years working at the University: 11

Research area: Technology