

FEEDBACK INTERVENTION RESEARCH HISTORICAL REVIEW: FROM SINGLE TO MULTIDIMENSIONAL*

*Saulius Olencevicius***

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Abstract. *Feedback intervention research historically transformed focus from using single to using multidimensional factor analyses. Since researchers have been traditionally interested in determining how to predict future human behavior, the complexity of the feedback intervention research has grown gradually. The importance and multidimensionality of feedback construct on the individual level is presented by the key*

theories, which are reflected in the historical context, starting from the first “Law of effect”, up to the hybrid “Feedback Intervention Theory”. As a conclusion, possible future research direction is presented.

Keywords: *feedback intervention, feedback development, feedback transformation, feedback theory historical review.*

1. INTRODUCTION

In recent years, feedback management has become increasingly important in daily life (Johnson, Rocheleau, & Tilka, 2015) and as a tool, leading organizations to success (DeNisi & Murphy, 2017; Farndale, Hope-Hailey, & Kelliher, 2011). Moreover, performance management and its concurrent part – feedback delivery, has received growing attention from managers and researchers’ and is still a widely used concept in the management theory field. However, there is no final agreement regarding the definition of the concept of feedback (Ramaprasad, 1983). Scholars stated, that

timely performed feedback intervention can foster individual performance (Kuvaas, Buch, & Dysvik, 2016). Despite a solid amount of research little is known regarding implementation of feedback mechanisms and its complexity (Caemmerer & Wilson, 2010). Therefore, the present historical overview is trying to help us understand the development and status quo of feedback intervention from individual (not organizational) behavioristic paradigmatic perspective and show possible future research directions.

The documented history of feedback intervention research had started in the

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** Saulius Olencevicius, PhD student, ISM University of Management and Economics, Arkliu str.18, 01305 Vilnius, Lithuania, Email: saulius.olencevicius@stud.ism.lt, Tel.: +37069836530, Fax: +37052469624

beginning of the 19th century by the experimental works of Edward Lee Thorndike. Scholars were interested how to predict individual behavior and what factors influenced performance change. Initially, researchers focused on simple variable analyses. Later, evaluating feedback that influenced individual performance and behavior became a highly complex issue.

Positive and negative feedback intervention can increase or decrease recipients' performance (Higgins, 1997; Van-Dijk & Kluger, 2004). The latest feedback intervention research shows a high complexity of feedback delivery and the recipients' reactions. Kluger and DeNisi (1996) performed important meta-analytical research and proposed a new hybrid theory, where feedback intervention effect is based on different levels of control, such as: task learning, task motivation and meta-task. The hybrid *Feedback Intervention Theory* (FIT) (Kluger & DeNisi, 1996) is important in understanding feedback delivery mechanism from approach of individual level concept. Unfortunately, no more theories since FIT in 1996 have been developed in feedback intervention area.

2. KEY THEORIES IN FEEDBACK DEVELOPMENT

Feedback research has gone a long way. After reviewing the scientific literature, the developments of feedback intervention historical behavioristic theories are presented. The theories were selected based on a) novelty and influence on explaining feedback mechanism; b) individual behavioral level; c) high acknowledgement among scholars; d) possibility to estimate and explain how feedback intervention influenced individual reaction or future behavior; e) multidimensionality of used constructs. Based on these

criteria, the following five theories were selected.

2.1. *Law of Effect* by Edward Lee Thorndike

The origins of feedback intervention research date back more than a hundred years ago. People at that time, same as now, thought that it is possible to predict human behavior. Historically, the first most influential behavioristic theory in feedback intervention was Edward Lee Thorndike's (1874 – 1949) *Law of effect* (1905-1911), which was developed by using animals as test objects and later applied to human society. Thorndike (1911) stated:

“Of several responses made to the same situation, those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections with that situation weakened, so that, when it recurs, they will be less likely to occur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond” (Thorndike, 1911, p.244).

According to this statement, operant conditioning involves learning from the consequences of individuals' behavior. It means that any behavior that results in something pleasant is likely to be repeated, while any behavior supported by unpleasant outcomes is likely to be stopped. Based on this, a positive feedback was equated with reinforcement and negative feedback with punishment (Lempert & Tricomi, 2015). Reinforcement and punishment assist learning as well as performance.

Thorndike conducted his laboratory investigations with animals (cats) and humans (McLeod, 2007). Developing “*Law of Effect*” he performed an experiment with cats, which were placed in a specially designed experiment cage – called a “puzzle-box”. The door of the cage was locked by a simple latch. Outside the cage, Thorndike placed a piece of salmon. The cat was placed in the box and could freely move about the inside. It could see and smell the fish but couldn’t reach it from the cage. After some time, the cat began maneuvers by extending its paws through the bars to reach a fish, but without success. After a few unsuccessful attempts, the cat started scratching at the bars of the cage and rushed around inside. Accidentally it hit the latch on the door and the door was opened. The cat went out and ate the fish. The total escape reaction time was measured. The cat was placed back into the cage and a new piece of fish was served again. The cat repeated the process and by hitting the latch one more time went out and successfully reached the fish. This process was repeated multiple times. Thorndike noticed, that by repeating this experiment less of time was spent to open the door and the releasing of the latch became faster. Gradually the cat stops extending its paws through the bars and focused its activities to the latch. Later, it moved immediately to trying to open the door by hitting the latch. After some time, the cat developed an efficient and fast way to open the door. Later experiments with a more complicated door opening schemes were performed, where few locking mechanisms were involved. Such changes of cat behavior incorporate learning process (McLeod, 2007).

Thorndike theorized that the cat learned to escape the cage by trial and error, where positive reinforcement was involved. Analysis of this experiment showed that

the behavior that provided the desired effect became dominant and, therefore, occurred faster (Thorndike, 1927).

A number of other animal intelligence measuring experiments were performed involving dogs, monkeys, chicks and etc. The learning process by creating comfort, or discomfort, was measured and described as well.

According to the *Law of Effect*, responses which are followed by a satisfying outcomes would occur with greater frequency over the time (Thorndike, 1927). In addition responses which were followed by an unsatisfactory outcome would occur less frequently over the time (Thorndike, 1927).

Later experiments were performed on humans, where positive and negative feedback (reinforcement) helped to develop required behavior: to strengthen positive behavior by using pleasant consequences and eliminating the undesired one by using unpleasant consequences. Such motivational and behavior tendency is still fully valid, powerful and applicable today.

2.2. Operant conditioning by Burrhus Frederic Skinner

Causes of an action and its consequences were widely analyzed by Burrhus Frederic Skinner (1904-1990). He thought that the best way to understand behavior is to observe the causes of an action and its consequences (Iversen, 1992). Skinner (1938) introduced the term *operant conditioning* (manipulating the behavior by using reinforcement which is provided after the desired response), which evolved into the *Reinforcement theory* (McLeod, 2007; Skinner, 1938). Operant conditioning is a way of learning that occurs via rewards and punishments for demonstrated behavior (Skinner, 1938). Through operant

conditioning a direct interrelation is made between a behavior and a consequence for that behavior (Skinner, 1963).

Skinner's theory of operant conditioning was based on the work of Thorndike (1905). Skinner (1938) introduced a new term of the Law of Effect – *Reinforcement* (behavior which is reinforced most likely will be repeated, and behavior which is not reinforced most likely will be extinguished). He identified three types of responses, or *operants*, which can follow behavior:

“Neutral operants. *Responses from environment that neither increase nor decrease the probability of a behavior being repeated;*

Reinforcers. *Responses from the environment which increase the probability of a behavior being repeated. Reinforcers can be positive, or negative;*

Punishers. *Responses from the environment which decrease the likelihood of a behavior being repeated. Punishment weakens behavior”*(Skinner, 1948, p.168).

Skinner demonstrated the reinforcement effect by placing a hungry rat in a specially designed box, called *Skinner Box*. It had a lever on the side wall and as a rat moved inside, it accidentally could knock the lever. As soon as the rat did that, a food pellet dropped into a special place close to the lever. The rat quickly learned how to get food. After some time, when they were put in the box, rats went straight to the lever. Receiving food by pressing the lever ensured that rats would repeat the action. Skinner didn't claim that the rats learned to use a lever to get food. He instead focused on describing the observed behavior that the rats had demonstrated (Iversen, 1992; McLeod, 2007).

Skinner conducted similar experiments with pigeons. He placed a bird into the box where, during a similar learning, process it learned to read two words - “*PECK*” and “*TURN*”. When action was performed correctly, the pigeon was rewarded with food. Initially, the bird was taught to peck a small red disc in order to get reward (food). To measure the bird's activity food was intermittently provided every time the pigeon hit the disc. Skinner called this “The Schedule of Reinforcement” (Skinner, 1963). He also directly compared this process and schedule of reinforcement with a human, who played gambling machines and concluded that the effect was the same. Humans play gambling machines because of “The Schedule of Reinforcement” – causes of behavior (Skinner, 1948).

Positive reinforcement strengthens a behavior by providing outcomes individuals find rewarding (Iversen, 1992). Negative reinforcement strengthens a behavior by removing an unpleasant reinforcer (discomfort) for the individual (Skinner, 1948). Punishment is defined as the opposite effect of reinforcement, as it is designed to weaken or eliminate a reaction, rather than increase it (Skinner, 1963). A direct unpleasant stimulus, like a shock after a response or removal of a potentially rewarding stimulus can result in effective punishment (McLeod, 2007).

Skinner demonstrated how negative reinforcement worked by his experiment on rats. He placed the rat in his modified *Skinner Box* and then connected its floor to an unpleasant electric current which caused a discomfort for the rat. Initially, as the rat moved inside the box, it accidentally pressed the lever. By doing it the rat switched off the electric current. The rats rapidly learned to go directly to the lever after a few times of being placed in the

box. Being able to avoid the electric current in such a way ensured that they would repeat the same activity each time. With this experiment Skinner went further and taught the rats to avoid the unpleasant electric current by switching on a light just before the electric current came on. The rats rapidly learned to press the lever after the light came on because they realized that this would terminate the electric current (Skinner, 1938).

B.F. Skinner suggested that the way humans acquire behavior is similar to the way the rats learned to use a lever. There is a small difference between the learning process for humans and that in other animals. Therefore, research could be conducted on animals, as well as on humans (Skinner, 1938).

Since then, multiple studies have been conducted, and theories have been developed. Nevertheless, the main points regarding behavior remain unchanged: reinforcement (positive feedback) and punishment (negative feedback) (Iversen, 1992; McLeod, 2007). One or the other is used to motivate and adjust people's behavior in order to achieve settled targets. Therefore, reinforcement and punishment variables, better known as positive and negative feedback interventions, are still important constructs in the behavioral feedback research paradigm and require additional attention in the future research models.

2.3. Reinforcement Sensitivity Theory by Jeffrey Alan Gray

The next step in the feedback theory development was achieved by Jeffrey Alan Gray (1934 – 2004). He introduced biologically based *Reinforcement Sensitivity Theory* (RST) (1970, updated in 2000), which is the most prominent motivation-based theory of personality (Corr, 2004).

RST is a biologically based theory of personality that stipulate three major subsystems of the brain, and is one of the few personality forms that does not require a strictly negative view of impulsivity (Corr, 2004).

It is believed that the received performance feedback is perceived as an affective event, influencing individuals' ephemeral affective state, followed by influencing individual's goals and behavioral regulation (Gray, 1987; Ilies & Judge, 2005). It could be viewed as a psycho-neurological process. At the basic motivational level, this affective event has a mediating role in the Gray's RST (Gray, 1990).

In his research, Gray (1990) focused on approach (promotion focus) and avoidance (prevention focus), as the two fundamental dimensions of behavior. Gray proposed that two separate systems regulate individuals' behavioral motivation – *Behavioral Approach System* (BAS) and *Behavioral Inhibition System* (BIS) (Gray, 1970). These systems are related to different types or reinforcements (Gomez & Gomez, 2002). BAS is responsible for regulating appetitive (promotion) motivation and could be activated by incentive signaling possible reward (or punishment avoidance), where BIS is responsible for regulating aversive (prevention) motivation and could be activated by stimulus signaling possible punishment (or non-reward) (Gray, 1990).

In addition to the mentioned behavioral intentions, which they regulate, BAS and BIS contain emotional and cognitive components as well (Ilies & Judge, 2005). The BAS is responsible for regulating experience of positive emotions and BIS is responsible for regulating experience of negative emotions (Gray, 1990). Different stimuli in the environment influence individuals' affective states, which further reinforce

individuals' behavioral motivation and intention for corresponding actions (Gray & McNaughton, 2000).

The BIS is sensitive to possibility of punishment, frustrated non-reward and novelty. Therefore, its activation is targeted to decrease behavior toward such stimuli (Gomez & Gomez, 2002). The BAS is sensitive to the possibility of reward and non-punishment. Its activation is targeted to increase behavior towards mentioned stimuli (Gomez & Gomez, 2002).

For example, positive reinforcement (appetitive stimulus) activate individuals' approach behavior, which leads to reward. Such experience of positive affect reinforces the approach response in the future and should increase individual performance (Ilies & Judge, 2005). Vice versa, when people experience unpleasant negative emotions, they will trigger and reinforce avoidance behavior, because it is related to BIS. Accordingly, performance feedback indicating success or failure in achieving the set goals influences a person's positive or negative affect, which leads to activation of behavioral approach (promotion) or avoidance (prevention) systems (Ilies & Judge, 2005).

The foremost responsibility of the BAS is to facilitate avoidance and escape behaviors in response to both conditioned and unconditioned aversive stimuli. This system is also, unquestionably, the neutral substrate for the emotions of fear and panic (Gray & McNaughton, 2000). The BIS strengthens the '*get me out of this place*' feeling of fear, not anxiety. The BIS is an illustration of a negative feedback scheme, dedicated to reducing the discrepancy between the immediate threat and the desired outcome (i.e., safety) (Corr, 2004).

The BAS is, still, to be viewed as the appetitive motivation system. Its primary

obligation is to motivate approach behavior in response to both conditioned and unconditioned appetitive stimuli (Corr, 2004). In addition, activity in the BAS is postulated to be linked with the positive emotions of happiness and relief.

Another important part of RST is the Behavioral Inhibition System (BIS) (Gray, 1987). In RST, the BIS enables further evaluation of the situation (Gray & McNaughton, 2000) by being responsible to resolve conflicts among discrepant goals (Smillie & Jackson, 2006). At the same time, the BIS is also seen as a neural basis that underlies the emotion and anxiety (Smillie & Jackson, 2006).

Gray (1970, 1982, 1990) stated that individuals characterized by high anxiety would be very sensitive to punishment stimuli, while those characterized by high impulsivity would be very sensitive to reward stimuli. The relationship of these systems to personality is difficult to determine, but sensitivity to punishment represents combined BIS functioning, whereas sensitivity to reward represents BAS functioning (Corr, 2004; Gray & McNaughton, 2000).

In Gray's RST, the BIS and BAS are more related to sensitivities, than to the actual behavior (Gomez & Gomez, 2002). Following this argument, scholars have developed BIS and BAS measurement scales, where BIS scale measures individuals' sensitivity regarding anxiety triggering events, and BAS scales measures individuals' sensitivity to possible events that could possibly trigger impulsive responses (Gomez & Gomez, 2002).

BIS and BAS sensitivity demonstrates different influential effects on the individuals' assumed affect-goal relationship revision (Richard & Diefendorff, 2011). These effects are directly related to individual

behavior: person exhibits action of feedback approach, or avoidance.

RST had supported feedback intervention research development by analyzing and explaining the psycho-neurological process in human brains. The research linked cognitive motivational reactions to positive and negative feedback delivery (Richard & Diefendorff, 2011). RST disclosed that individual reaction to received feedback sign is caused by intrinsic processes and affective states.

As an outcome of RST review it could be stated, that individuals' future behavior is cognitively preprogramed in individuals' brain and therefore, can be triggered by using selective feedback intervention. This allows to plan motivational intentions and to predict individual's behavior and performance.

2.4. Self-Regulation Theory by Edward Tory Higgins

A significant step further in the feedback research development was Edward Tory Higgins, (1997) *Self-Regulation Theory (SRT)*. He proposed that individuals have two basic self-regulation systems: the first handles the achievement of reward and focuses peoples' attention on promotion goals, while the second handles the avoidance of punishment and focus peoples' attention on prevention goals (Higgins, 1997). Each regulatory focus demonstrates different outcomes for perception, decision-making and emotions (Forster, Higgins, & Idson, 1998; Higgins, 1998). Prevention focused individuals are more sensitive to punishment and usually use avoidance as a strategy, while promotion focused individuals are more sensitive to rewards and first use approach as a strategy (Higgins, 1997).

The *SRT* postulates that the basic human survival needs for security and nurturance

operate differently at core principle. In order to survive, people require adaption to the environment, especially for existence in the social neighborhood (Higgins, 1998).

The prevention self-regulation focus is described by a minimum of three possible antecedents: activation of security needs, strong obligations and the evaluation of situation in "loss vs. non-loss" conditions (Higgins, 1998). On the contrary, the promotion self-regulation focus can be induced by activation of nurturance needs, strong ideals and the evaluation of situation in "gain vs. non-gain" conditions (Higgins, 1998). Van-Dijk and Kluger (2004) stated, that each regulatory focus demonstrates different outcomes for perception, decision making and for emotions. Prevention focus individuals are sensitive to punishment that could be related to poor performance, while promotion focus individuals are sensitive to reward that is related to superior performance (Higgins, 1997, 1998; Higgins et al., 1997). Therefore, Higgins proposed that fit (or congruence) between the prominent regulatory focus and type of prominent outcome increases motivation.

The idea of fit (or congruence) was tested by Shah, Higgins and Friedman (1998), who found that, when people were induced to think about rewards, their motivation was positively correlated to the promotion focus and negatively correlated to the prevention focus. Thus, the opposite is also true, when people were asked to think about losing money, motivation is negatively correlated with promotion focus and positively correlated with the prevention focus. In summary, the motivation increases when congruence (or fit) between regulation focus and outcome exists, and decreases when they differ or are incongruent. These findings provide assumptions that negative feedback is congruent with prevention focus, whereas

positive feedback is congruent with promotion focus.

Van-Dijk and Kluger (2011) predict that congruent positive feedback for the promotion focus individuals or negative feedback for the prevention focus individuals will demonstrate higher motivational influence rather than incongruent feedback. Some initial results were reported by Idson and Higgins (2000), who operationalized regulatory focus with personality measures and feedback. Scholars analyzed information of false success, versus failure in an experiment with students. Results show that disparity between prevention and promotion focus could appear in a person's value profile. Beuk and Basadur (2016) stated that promotion focus individuals tend to demonstrate higher creative performance, while prevention focus individuals are associated with higher analytical performance (Beuk & Basadur, 2016).

Prevention and promotion focus are both oriented to and relevant for task performance, but for different reasons (Lanaj, Chang, & Johnson, 2012). Individuals of both types can demonstrate high performance and not be evaluated as one better than the other. Likewise, individual regulatory focus is related to emotions, where it can influence the nature and value of peoples' emotional experience (Brockner & Higgins, 2001). Success and failure leave an imprint with which people associate themselves and make strategies related to the past conditions. People consider the potential strategy and its possible emotional outcomes (Cropanzano, Paddock, Rupp, Bagger, & Baldwin, 2008).

Some similarities to Higgins's distinction can be found in several other motivational theories, with authors, such as Herzberg, Mausner, who proposed two factors of performance motivation: hygiene

and social motivators. Atkinson (1964) has created a personality model of achievement motivation, by proposing a basic difference between "fear of failure" and "hope of success". Researchers have explained differences between extrinsic and intrinsic motivation (Deci & Ryan, 1985), while other scholars have presented research, differentiating between continuance and affective commitment (Meyer, Allen, & Smith, 1993). In addition, theory describes that the control of prevention goals is reflected in the "Negative Activation" system of mood, while the control of promotion goals is reflected in the "Positive Activation" system of mood (Watson, Wiese, Vaidya, & Tellegen, 1999). Hygiene factors, performance orientation, commitment and "Negative Activation" system to a certain extent correspond to prevention focus. Other motivators, like affective commitment, learning goals, intrinsic motivation and "Positive Activation" system conforms to promotion goals (Van-Dijk & Kluger, 2004).

The *SRT* had provided valuable insights regarding individuals' self-regulation systems. It helps to group individuals based on their regulatory focus and has raised the idea of motivational fit, which is necessary to change intentionally individuals' future behavior. Moreover, the idea of personality regulatory focus fit with other feedback related research constructs still requires future research attention.

2.5. Feedback Intervention Theory by Avraham Kluger & Angelo DeNisi

Kluger and DeNisi (1996) proposed a hybrid theory – *Feedback Intervention Theory (FIT)*. As explained by *FIT*:

"Feedback Interventions (FI) change the locus of attention among three general

and hierarchically organized levels of control: task learning, task motivation and meta-tasks (including self-related) processes. FI effectiveness decreases as attention moves up the hierarchy closer to individual and away from task”(Kluger & DeNisi, 1996, p.254).

FIT is oriented toward integrating the present feedback theories, considering the known processes that are not explained by existing theories, and it is trying to explain the observed incoherence in the effects of feedback intervention on performance (Kluger & DeNisi, 1996). *FIT* was presented as a preliminary theory, although lacking very detailed and specific predictions. According to its authors, *FIT* has five basic arguments (Kluger & DeNisi, 1996):

1. *“Behavior is regulated by comparisons of feedback to goals or standards;*
2. *Goals or standards are organized hierarchically;*
3. *Attention is limited and therefore only feedback-standard gaps that receive attention actively participate in behavior regulation;*
4. *Attention is normally directed to a moderate level of the hierarchy;*
5. *FIs change the locus of attention and therefore affect behavior”* (Kluger & DeNisi, 1996, p.259).

The arguments are interconnected, and each further argument is raised from the previous one. The first four arguments are common and are present in various feedback intervention related theories. The fifth argument, that feedback changes the point of attention, is unique to *FIT* and is pivotal for understanding the feedback – performance link (Kluger & DeNisi, 1996).

In order to achieve the set goals individuals are usually influenced by supervisors’ feedback intervention. It could be positive or negative assessment of someone’s achievements relative to the set goal. Depending on personality type, positive or negative feedback have higher impact on recipients’ behavior (DeNisi & Kluger, 2000; Higgins, 2005; Kluger & Van-Dijk, 2005; Van-Dijk & Kluger, 2011). This issue is widely covered and agreed on by scholars, but the assumption that behavior is regulated via feedback-goal/standard comparison and inadequacy reduction is too simple (Kluger & DeNisi, 1996). Namely, this assumption cannot combine the simultaneous activation of several factors, including the destructive feedback effects on learning and the performance effects of feedback intervention induced affect. With a few extra preconditions, the preliminary *FIT* sets the basics to incorporate these challenges (Kluger & DeNisi, 1996).

Task performance in *FIT* is regulated by three abstract hierarchical levels of linked processes: meta-task processes, task-motivation processes, and task-learning processes. These processes are abstract, but the abstraction enables the exposition of the focal processes proposed in *FIT* (Kluger & DeNisi, 1996). Therefore, *FIT* changes the previous treatments of feedback intervention by differentiating between feedback-supported motivation and learning processes (un)related to the task. The evaluation of these processes needs to be interdependent and probabilistic (Kluger & DeNisi, 1996). Below is a short summary of all three hierarchical levels of processes in relation to *FIT*.

Task-Motivation Processes. On this level, feedback intervention is compared with a set task standard. If the feedback sign is negative then dedicated efforts are

increased, while if the feedback sign is positive then future efforts are maintained or could even be decreased (Kluger & DeNisi, 1996).

Task-Learning Processes. On this level, learning processes can be activated. If individuals intend to overcome subjective failure, traditionally they should work harder or smarter (Kluger & DeNisi, 1996). The learning process can also be activated, if feedback intervention content refers to components of the task.

Meta-Task Processes. The change of attention in hierarchy level can activate a minimum of four independent processes: process of resolving feedback-self discrepancies, priority to the self, exhaustion of cognitive resources for task performance and the emotional processes (Kluger & DeNisi, 1996).

In the mode of resolving feedback-self discrepancies, related misalignment can be reduced by continuing to work on the task. Individuals with a high self-efficacy are usually less likely to give up a task, even if they face a failure (Kluger & DeNisi, 1996).

In the mode of attention to the self-case, individuals use the strategy to increase performance of the main task and decrease performance of secondary task. Such reaction is described by several theories, e.g. the objective self-awareness theory (Wicklund, 1975), and control theory (Carver & Scheier, 1981). In this case, both negative and positive feedback interventions shift attention to the individual (Kluger & DeNisi, 1996).

In exhaustion of cognitive resources for task performance cases, feedback influenced increase in performance is usually observed, when a task is automated, and less input is needed for its accomplishment.

Each separate feedback sign (positive or negative) is evaluated and then summarized, in order to evaluate harm-benefit future potential (Kluger & DeNisi, 1996). Generally, feedback intervention alters meta-task processes by focusing attention to task motivation standards.

After a preliminary investigation of *FIT*, Kluger & DeNisi suggested that three groups of factors set the effect of feedback intervention on performance: hints of the FI message, type of task performed, and personality factors. The hints of the feedback message could be related to recipients' standards and the action they take. The nature of the task shows how sensitive it is to shift of attention. The personality factors are responsible for the recipient's decision on how to eliminate standard-feedback gap.

Preliminary *FIT* integrates a wide range of feedback intervention theories and cover task-related learning, task-related motivation, self-related and other meta-task processes (Kluger & DeNisi, 1996). However, it also has some limitations, one of these being that it does not disclosing detailed and specific individual behavior predictions. The processes, described by *FIT*, need to be tested directly in the future, which is the kind of research currently lacking.

3. CONCLUSIONS

The present historical review shows how feedback intervention research evolved from a simple few variable analyses into a multidimensional combination, which fosters our understanding on how the feedback mechanism works. The theory discloses that feedback research is enlarging and increasing its focus (Luque & Sommer, 2000). By acknowledging the importance of feedback

intervention, research has changed from a simple goal/achievement focused practice to a dialog and a more systematic multi-dimensional approach (Baker, Perreault, Reid, & Blanchard, 2013; Dahling, Gabriel, & MacGowan, 2017). Thus, in future research, the focus must be on using multi-dimensional constructs.

In the area of human resources, performance feedback intervention is becoming one of the most important managerial activities, influencing individual effectiveness (McCarthy & Garavan, 2006) and demonstrates the degree, to which an individual is respected and valued in an organization (Sommer & Kulkarni, 2012). However, it is still unclear, whether the positive feedback serves as a “*license to relax*”, or fosters greater effort from the recipient (Jaworski & Kohli, 1991). Negative feedback is, usually, overestimated, as well (Breevaart, Bakker, Demerouti, & Derks, 2016). If the recipient is in a defensive position, feedback will be ineffective (Dysvik, Kuvaas, & Gagne, 2013).

Feedback research has gone a long way, but there are many unanswered questions remaining about the complexity of the feedback mechanism. It is evident that managers should provide feedback in a way that will encourage individuals to increase their performance (Moss & Sanchez, 2004). However, what is the right way to do that?

It seems the most influencing factors have not been identified yet. Therefore, multi-dimensional feedback intervention research should be considered in the future.

However, a critical evaluation of the analyzed theories has shown that, despite the longstanding tradition and progress of the feedback theory, the major constructs remain the same, especially the positive and negative reinforcement, which is still widely used in managerial practice today. Scientific contribution helped to explain and disclose the behavioral reactions, even on neurological and physiological levels. Such information should be used in future research by selecting appropriate independent and dependent variables.

Based on the theory review, one of the possibilities for the future feedback research could be multidimensional approach and evaluation of the effect of congruence (or fit) among the feedback sign, individual's regulatory focus and the type of task. Empirical evidence could provide a better understanding regarding how feedback sign moderates individuals' future behavior and changes performance. The major outcome of such research could be a simplified recipe for the managers to help them with feedback delivery process. Being able to predict a possible feedback recipient future behavior would make it easier to decide whether to use a positive or a negative feedback.

References

1. Baker, A., Perreault, D., Reid, A., & Blanchard, C. M. (2013). Feedback and organizations: Feedback is good, feedback-friendly culture is better. *Canadian Psychology/Psychologie canadienne*, 54(4), 260-268.
2. Beuk, F., & Basadur, T. (2016). Regulatory Focus, Task Engagement and Divergent Thinking. *Creativity and Innovation Management*, 25(2), 199-210.
3. Breevaart, K., Bakker, A. B., Demerouti, E., & Derks, D. (2016). Who takes the lead? A multi-source diary study on leadership, work engagement, and job performance. *Journal of Organizational Behavior*, 37(3), 309-325.

4. Brockner, J., & Higgins, E. T. (2001). Regulatory Focus Theory: Implications for the Study of Emotions at Work. *Organizational Behavior and Human Decision Processes*, 86(1), 35-66.
5. Caemmerer, B., & Wilson, A. (2010). Customer feedback mechanisms and organisational learning in service operations. *International Journal of Operations & Production Management*, 30(3), 288-311. doi:10.1108/01443571011024638
6. Carver, C. S., & Scheier, M. F. (1981). *Attention and self regulation: A control theory to human behavior*. New York.
7. Corr, P. J. (2004). Reinforcement Sensitivity Theory and Personality. *Neuroscience and Behavioral Reviews*, 28.
8. Cropanzano, R., Paddock, L., Rupp, D. E., Bagger, J., & Baldwin, A. (2008). How regulatory focus impacts the process-by-outcome interaction for perceived fairness and emotions. *Organizational Behavior and Human Decision Processes*, 105, 36-51.
9. Dahling, J. J., Gabriel, A. S., & MacGowan, R. (2017). Understanding typologies of feedback environment perceptions: A latent profile investigation. *Journal of Vocational Behavior*, 101, 133-148.
10. Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-Determination in Personality. *Journal of Research in Personality*, 19, 109-134.
11. DeNisi, A. S., & Kluger, A. N. (2000). Feedback effectiveness: can 360-degree appraisals be improved? *Academy of Management Executive*, 14(1), 129-139.
12. DeNisi, A. S., & Murphy, K. R. (2017). Performance Appraisal and Performance Management: 100 Years of Progress? *Journal of Applied Psychology*, 102(3), 421-433.
13. Dysvik, A., Kuvaas, B., & Gagne, M. (2013). An investigation of the unique, synergistic and balanced relationships between basic psychological needs and intrinsic motivation. *Journal of Applied Social Psychology*, 43, 1050-1064. doi:10.1111/jasp.12068
14. Farndale, E., Hope-Hailey, V., & Kelliher, C. (2011). High commitment performance management: the roles of justice and trust. *Personnel Review*, 40(1), 5-23.
15. Forster, J., Higgins, E. T., & Idson, L. C. (1998). Approach and avoidance strength during goal attainment: regulatory focus and the "Goal Looms Larger" effect. *Journal of Personality and Social Psychology*, 75(5), 1115-1131.
16. Gomez, A., & Gomez, R. (2002). Personality traits of the behavioural approach and inhibition systems: associations with processing of emotional stimuli. *Personality and Individual Differences*, 32, 1299-1316.
17. Gray, J. A. (1970). The psychophysiological basis of introversion-extraversion. *Behavior Research and Therapy*, 8.
18. Gray, J. A. (1987). *The psychology of fear and stress* (2 ed.). New York: Cambridge University Press.
19. Gray, J. A. (1990). Brain systems that mediate both emotion and cognition. *Cognition and Emotion*, 4.
20. Gray, J. A., & McNaughton, N. (2000). *The neuropsychology of anxiety*. Oxford University Press.
21. Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52(12), 1280-1300.

22. Higgins, E. T. (1998). Promotion and Prevention: Regulatory focus as a motivational principal. *Advances in Experimental Social Psychology*, 30.
23. Higgins, E. T. (2005). Value from regulatory fit. *Current Directions in Psychological Science*, 14(4), 209-213.
24. Higgins, E. T., Shah, J., & Friedman, R. (1997). Emotional Responses to Goal Attainment: Strength of Regulatory Focus as Moderator. *Journal of Personality and Social Psychology*, 72(3), 515-525.
25. Idson, L. C., & Higgins, E. T. (2000). How current feedback and chronic effectiveness influence motivation: everything to gain versus everything to lose. *European Journal of Social Psychology*, 30, 583-592.
26. Ilies, R., & Judge, T. A. (2005). Goal Regulation Across Time: The Effects of Feedback and Affect. *Journal of Applied Psychology*, 90(3), 453-467.
27. Iversen, I. H. (1992). Skinner's Early Research. From Reflexology to Operant Conditioning. *American Psychologist*, 47(11), 1318-1328.
28. Jaworski, B. J., & Kohli, A. K. (1991). Supervisory feedback: alternative types and their impact on salespeople's performance and satisfaction. *Journal of Marketing Research*, XXVIII, 190-201.
29. Johnson, D. A., Rocheleau, J. M., & Tilka, R. E. (2015). Considerations in Feedback Delivery: The Role of Accuracy and Type of Evaluation. *Journal of Organizational Behavior Management*, 35(3-4), 240-258.
30. Kluger, A. N., & DeNisi, A. S. (1996). The effects of feedback interventions on performance: a historical review, a meta-analysis, and a preliminary Feedback Intervention Theory. *Psychological Bulletin*, 119(2), 254-284.
31. Kluger, A. N., & Van-Dijk, D. (2005). The interactive effect of feedback sign and task type on motivation and performance. *United States Army Research Institute For the Behavioral and Social Sciences*.
32. Kuvaas, B., Buch, R., & Dysvik, A. (2016). Constructive supervisor feedback is not sufficient: Immediacy and frequency is essential. *Human Resource Management*.
33. Lanaj, K., Chang, C. H., & Johnson, R. E. (2012). Regulatory focus and work-related outcomes: a review and meta-analysis. *Psychological Bulletin*, 138(5), 998-1034.
34. Lempert, K. M., & Tricomi, E. (2015). The Value of Being Wrong: Intermittent Feedback Delivery Alters the Striatal Response to Negative Feedback. *Journal of Cognitive Neuroscience*, 28(2), 261-274.
35. Luque, M. F. S. D., & Sommer, S. M. (2000). The impact of culture on feedback-seeking behavior: an integrated model and propositions. *Academy of Management Review*, 25(4), 829-849.
36. McCarthy, A., & Garavan, T. (2006). Postfeedback development perceptions: Applying the theory of planned behavior. *Human Resource Development Quarterly*, 17(3), 245-267.
37. McLeod, S. A. (2007). Skinner - Operant Conditioning. *Simply Psychology*. <https://www.simplypsychology.org/operant-conditioning.html>
38. Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology*, 78(4), 538-551.
39. Moss, S. E., & Sanchez, J. I. (2004). Are your employees avoiding you?

- Managerial strategies for closing the feedback gap. *Academy of Management Executive*, 18(1), 32-44.
40. Ramaprasad, A. (1983). On the definition of feedback. *Behavioral Science*, 28(1), 4-13.
41. Richard, E. M., & Diefendorff, J. M. (2011). Self-regulation during a single performance episode: Mood-as-information in the absence of formal feedback. *Organizational Behavior and Human Decision Processes*, 115(1), 99-110.
42. Shah, J., Higgins, E. T., & Friedman, R. (1998). Performance Incentives and Means: How Regulatory Focus Influences Goal Attainment. *Journal of Personality and Social Psychology*, 74(2), 285-293.
43. Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. New York: Appleton-Century.
44. Skinner, B. F. (1948). Superstition in the pigeon. *Journal of Experimental Psychology*, 38. (2), 168.
45. Skinner, B. F. (1963). Operant Behavior. In W. Honig (Ed.), *Operant Behavior and Psychology*. New York: Appleton-Century.
46. Smillie, L. D., & Jackson, C. J. (2006). Functional Impulsivity and Reinforcement Sensitivity Theory. *Journal of Personality*, 74(1), 47-84.
47. Sommer, K. L., & Kulkarni, M. (2012). Does constructive performance feedback improve citizenship intentions and job satisfaction? The roles of perceived opportunities for advancement, respect, and mood. *Human Resource Development Quarterly*, 23(2), 177-201.
48. Thorndike, E. L. (1911). *Animal intelligence: experimental studies. The animal behaviour series*. Macmillan.
49. Thorndike, E. L. (1927). The law of effect. *American Journal of Psychology*, 39, (1/4), 212-222.
50. Van-Dijk, D., & Kluger, A. N. (2004). Feedback sign effect on motivation: is it moderated by regulatory focus? *Applied Psychology: An International Review*, 53(1), 113-135.
51. Van-Dijk, D., & Kluger, A. N. (2011). Task type as a moderator of positive/negative feedback effects on motivation and performance: A regulatory focus perspective. *Journal of Organizational Behavior*, 32, 1084-1105.
52. Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The Two General Activation Systems of Affect: Structural Findings, Evolutionary Considerations, and Psychobiological Evidence. *Journal of Personality and Social Psychology*, 76(5), 820-838.
53. Wicklund, R. A. (1975). Objective self-awareness. *Advances in Experimental Social Psychology*, 8, 233-275.

POVIJESNI RAZVOJ ISTRAŽIVANJA INTERVENCIJA ZASNOVANIH NA POVRATNIM INFORMACIJAMA: OD JEDNODIMENZIONALNIH PREMA MULTIDIMENZIONALNIMA

Sažetak

Istraživanje intervencija, zasnovanih na povratnim informacijama, transformiralo je svoj fokus s jednodimenzionalnih prema analizi multidimenzionalnih čimbenika. S obzirom da su istraživači tradicionalno bili zainteresirani za predviđanje budućeg ponašanja, kompleksnost istraživanja intervencija, zasnovanih na povratnim informacijama, polagano se povećavala. Značaj i multidimenzionalnost konstrukta povratne

informacije na individualnoj razini prezentira se pomoću pregleda ključnih teorija u povijesnom kontekstu, počevši od prvog „zakona efekta“, pa do hibridne „teorije intervencije putem povratnih informacija“. U zaključku se prezentiraju budući istraživački pravci.

Ključne riječi: *intervencija putem povratnih informacija, razvoj povratnih informacija, transformacija povratnih informacija, povijesni pregled teorija o povratnim informacijama*

