

# The role of positive emotions in play and exploration

UDK: 159.9.019.3

Pregledni članak

Primljeno: 4. 9. 2012.

Diana Olčar<sup>1</sup>Učiteljski fakultet Sveučilišta u Zagrebu  
diana.olcar@gmail.com

## Abstract

The role of emotions is to direct an organism towards a certain set of behaviours and/or to allocate the necessary metabolic support for emotion specific actions. Emotions call to mind urges to act in particular way, but positive emotions usually don't follow this model of so-called "action-tendencies". Instead, positive emotions induce changes, first of all, in cognitive activity, and changes in physical activity can follow. Fredrickson (2001) proposes the broad-and-built theory which describes how positive emotions function. According to this theory, positive emotions broaden persons' momentary thought-action repertoires, in other words, they widen the amount of the thoughts and actions that come to person's mind. This serves to build enduring personal resources, ranging from physical and intellectual ones to social and psychological. In this paper, focus is put on role of emotions in play and explorative behaviour. Although play and exploration are often put in the same category, there are distinct emotional systems in charge of them. Play usually occurs

<sup>1</sup> Diana Olčar zaposlena je kao asistentica na Katedri za psihologiju. Područja njenog znanstveno-istraživačkog interesa su pozitivna psihologija i psihologija obrazovanja. Izlagala je na više međunarodnih znanstvenih skupova i objavila je nekoliko znanstvenih radova iz područja psihologije.

when organism is in a safe environment and relatively happy state, while exploration occurs when organism experiences change in environment and is connected with more neutral state and feeling of anticipation. When organism is in positive emotional state, amount of the thoughts and actions that come to person's mind is widened, so they are more ready to exercise new behaviours which in the end leads to new skills. Exploration occurs when organism is in mildly negative or neutral state, so then organism behaves more stereotyped and is less possible that it will exercise novel behaviours.

**Keywords:** broaden-and-build theory of positive emotions, rough-and-tumble play, exploration

## Emotions

Definitions of emotion vary, but researchers are reaching consensus that emotions belong to the broader class of affective phenomena. According to this perspective emotions are conceptualized as “multi-component response tendencies that unfold over relatively short time spans” (Fredrickson, 2001, p. 219). Emotions differ from other similar constructs, e.g. affect or moods. Emotions typically have an object and are about some personally meaningful circumstance. They are usually brief and are often conceptualized as fitting into discrete categories, like fear, anger, or joy, while affect, for example, is often conceptualized as varying along positive and negative continuum.

Three phases are usually distinguished in emotional process. First, the situation is perceived and appraised according to individual's personal value system (e.g., I feel happy when I receive compliment or sad when I'm criticized for dressing in certain way). Then, if triggered emotions exceed certain threshold, person can become consciously aware of it - she or he has “the experience of having emotions” (e.g., my happiness or sadness has a certain intensity). Third, emotions are regulated (e.g., I can be more or less ready to dress in that way depending on which reaction I want to induce next time I meet this person) (Steunebrink, Dastani & Meyer, 2009).

This model shows that changes in environment activate specific emotion, which then motivates an organism to engage in certain set of behaviours. It is known from everyday experience that person who is happy will react with a smile to the certain comment, while person who is angry will react to the same comment with readiness to fight back. So, theorists suggest that emotions direct an organism towards a certain set of behaviours (Frijda, 2005; as cited in Mouilso, Glenberg, Havas & Lindeman, 2007) or allocate the necessary metabolic support for emotion specific actions

(Davidson, 1994; as cited in Mouilso et al., 2007). This readiness to act in certain way allows organism to choose the most adaptive behaviour in particular situation while the autonomic nervous system activates the appropriate physiological processes to allow the organism to carry out the chosen behaviour.

The urges to act in particular way Frijda calls “action tendencies”. According to him, action tendencies are “states of readiness to execute a given kind of action, which is defined by its end result aimed at or achieved” (Frijda, 1987; as cited in Steunebrink, Dastani & Meyer, 2009). They don’t need to be always achieved, they are embodied states, only to be realized when situation permits. Individual does not necessarily act on these urges, but his or her ideas about possible actions narrows down. The action-tendencies are not just thoughts, they also manifest physiologically. In fear, blood flow increases to major muscle groups and pupils dilate, preparing the body to flee, while in anger this same reaction prepares body to fight (Levenson, 1992; as cited in Fredrickson, 1998). This probably reflects evolutionary adaptive value of emotions which prepared our minds and bodies for dangerous situations.

## Positive emotions

Positive emotions have for a long time been marginalized in psychological research. There are three possible reasons for that (Fredrickson, 1998). First, there are less positive emotions than negative ones and they are less differentiated. For example, there is one positive emotion for every three or four negative emotions (Ellsworth & Smith, 1988; as cited in Fredrickson, 1998). Second, negative emotions are usually connected with problems that demand solving, while positive emotions in most cases don’t pose problems. And third, most positive emotions don’t follow previously stated model of action-tendencies. They usually do not occur in life-threatening circumstances and evolutionary they didn’t create well-defined urges to pursue specific courses of action. According to Fredrickson (1998) emotion theorists and researchers should discard idea of adopting a single general-purpose model of emotion than better create separate theories for distinct emotions. There are two ways in which positive emotions differ from negative ones. Positive emotions don’t necessarily induce specific action tendencies, so they should be better called „nonspecific“ action tendencies. They are not so prescriptive in a way which actions should be taken than they cause more general, non-direction oriented activation. Second, they do not necessarily induce tendencies for physical action. Instead, positive emotions induce changes first of all in cognitive activity and changes in physical activity can follow. Because of this, Fredrickson (1998) suggests we should better talk about thought-action tendencies, or what a person usually does in a particular

situation, and thought-action repertoires, or inventory of skills that person is able of doing in the same situation.

## The broad-and-build theory of positive emotions

For this reasons Fredrickson (2001; 2004) created the broaden-and-build theory which describes how positive emotions function. As it is said before, negative emotions induce an urge to act in a particular way (e.g. escape in fear, attack in anger). So in a way, person's momentary thought-action repertoire is narrowed to this specific reaction. In a life-threatening situation, a narrowed thought-action repertoire is beneficial because it promotes quick and decisive action. This reaction doesn't always have to be best reaction for this particular situation, but it worked best to save our ancestors' lives in dangerous situations. According to Fredrickson (2004) positive emotions have a complementary effect - they broaden peoples' momentary thought-action repertoires or they widen the amount of the thoughts and actions that come to person's mind. The evidences for this hypothesis come from studies that use global-local visual task to measure biases in attention focus. According to this hypothesis, negative emotional states should be connected with local biases that are consistent with narrowed attention, while positive emotional states should be connected with global biases that are consistent with broadened attention (e.g. Basso, Schefft, Ris, & Dember, 1996; as cited in Fredrickson, 2001). Fredrickson and Branigan (2000; as cited in Fredrickson, 2001) made two experiments to test this hypothesis. In each, participants viewed a film that induced joy, contentment, fear, and anger (and non-emotional film clip). After each film clip participants were asked not to think about the specifics of the film than to imagine being in a situation in which similar feelings would arise. After that participants were asked to list what they would like to do right in that moment, having in mind this feeling. Participants had to write their responses on blank lines that beginning with the phrase "I would like to." Participants in the positive emotions conditions (joy and contentment) wrote down more things that they would like to do than those in the neutral control condition. Consequently, those in neutral condition named more things that they would like to do than those in the negative emotion conditions (fear and anger) (Fredrickson, 2001).

Furthermore, positive emotions function as antidotes for the effects of negative emotions - they 'correct' or 'undo' the effects of negative emotions. One physical marker of negative emotions is increased cardiovascular activity. Positive emotions speed recovery from this cardiovascular reactivity, returning the body to baseline levels of activation. Fredrickson, Mancuso, Branigan & Tugade (2000) tested this hypothesis using task that created anxiety in participants. Participants had to prepare

a speech on the topic “Why you are a good friend”. They had just one minute for this task and they believed that their speech would be videotaped and later evaluated by their peers. The task induced the anxiety which was accompanied with increases in heart rate, peripheral vasoconstriction, and systolic and diastolic blood pressure. After that, they randomly assigned participants to view one of four films clips from which two clips evoked mild positive emotions (joy and contentment), a third clip was non-emotional and served as a neutral control condition and fourth clip evoked sadness. Participants in the two positive emotion conditions showed faster cardiovascular recovery than did those in the neutral control condition. Participants in the sadness condition needed more time than participants in other conditions for their cardiovascular activity to return to more mid-range levels of activation (Fredrickson et al., 2000).

Next, positive emotions fuel psychological resiliency. Positive emotions are outcome of resilient coping, but evidences also suggest that resilient people use positive emotions to achieve their effective coping- which implies that this relationship is reciprocal. According to definition of resilience resilient individuals should show faster cardiovascular recovery after high-activation negative emotion than less resilient people. Additionally, according to the broaden-and-build theory, this ability to recover should be increases when person experiences positive emotion (Fredrickson, 2001). Tugade and Fredrickson (2004) tested these two hypotheses using previously described time-pressured speech preparation task. Resilience was not connected with level of anxiety participants reported during the speech task or with their cardiovascular reactions. Still, it was connected with participants’ reports of positive emotions. Before they even began with the speech task, more resilient individuals reported higher levels of positive affect than their less resilient peers. But when they had to report how they felt during the preparation of speech, more resilient individuals reported that they felt anxiety, but also positive emotions - happiness and interest. The two hypotheses were confirmed. In line with first hypothesis, more resilient participants showed faster cardiovascular recovery after the speech task. Second hypothesis was also confirmed; participants who experienced positive emotions needed less time to achieve baseline levels of cardiovascular activation.

And last, the broaden-and-build theory predicts that experiences of positive emotions might also build psychological resilience and trigger upward spiral of positive emotions. One way people experience positive emotions is by finding silver lining in difficult times and in ordinary daily events (Fredrickson, 2000). This relationship is reciprocal - not only does finding positive meaning trigger positive emotion, but also positive emotions, because thinking is broadened, increase possibility of finding positive meaning during hardships (Fredrickson, 2000). These reciprocal relations

between positive emotions, broadened thinking, and positive meaning should accumulate during time. Positive emotions trigger the broadened scope of attention and cognition which contributes to better coping with hardship, and this improved coping should then increase chance of experiencing positive emotions in future. This way, people build their psychological resilience and their emotional well-being is enhanced (Fredrickson, 2001).

## Emotional systems

The problem I would like to tackle in this paper is how the emotions influence play and exploration. Although in the popular literature play and exploration are often described together, I will in this paper try to describe how they have different emotional systems behind them.

There are six criteria that define emotional systems (Panksepp, 1982; as cited in Panksepp, 1998). (1) They are genetically predetermined to respond unconditionally to life-threatening changes in environment. (2) They organize subject's behaviour by activating and inhibiting motor subroutines and concurrent anatomic-hormonal changes. (3) They change responsiveness of sensory systems aroused. (4) Neural activity of emotive systems outlasts the precipitating circumstances. (5) Emotive circuits can come under control of emotionally neutral stimuli. (6) They have reciprocal interactions with higher thinking processes as decision making or consciousness. To these six criteria Panksepp (1998) adds seventh: the emotional systems have to be able to generate feelings.

These emotional systems are innate and Panksepp (1998) suggests there are at least seven of them: SEEKING or exploratory, RAGE, FEAR, PANIC, sexual LUST, maternal CARE and roughhousing PLAY. In this paper I will focus just on two of them, SEEKING and PLAY.

## Play

Playing behaviour consists of "behaviours and behavioural sequences that are organism dominated rather than stimulus dominated, behaviours that appear to be intrinsically motivated and apparently performed for "their own sake" and that are conducted with relative relaxation and positive affect" (Weisler and McCall, 1976; p. 494).

Burghardt (2011, p.13) names five criteria for recognizing the play. According to him, all this criteria must be met to some extent for some behaviour to be recognized as play. First criterion is that the behaviour that is performed is not totally functional; which means that it includes elements, or it is directed toward, stimuli that do not

contribute to current survival. Second criterion is that the behaviour is spontaneous, voluntary, intentional, pleasurable, rewarding, reinforcing, or done for its own sake. Third criterion is that it differs from strictly functional expressions of behaviour in at least one way: it can be incomplete (generally through inhibited or dropped final elements), exaggerated, awkward, precious, or involves behaviour patterns with modified form, sequencing or targeting. Next criterion is that behaviour is performed repeatedly in similar, but not rigidly stereotyped, form. The last criterion is that behaviour is initiated when a person or animal is adequately fed, clothed, healthy and not under stress.

Possible functions of play have been discussed thoroughly (Smith, 1982; as cited in Panksepp, 1998) and they fit in two categories: social and non-social. "Social functions are learning of various competitive and non-competitive social skills, ranging from behaviours that facilitate social bonding and social cooperation to those that promote social rank and leadership, like the ability to communicate effectively. The potential non-social functions are ability of play to increase physical fitness, cognitive abilities, skilful tool use, and ability to innovate. Innovation includes skills as generalized cognitive abilities such as ability to think creatively in wide range of situations to very specific skills such as learning to hunt among young predators and predator avoidance skills in prey species" (Panksepp, 1998). Unfortunately, these findings are not enough empirically supported.

## The rough-and-tumble play

In this paper, I will focus on one specific kind of play, rough-and-tumble play (RTP), mainly because empirical research shows that this kind of play is inherent in mammals and it even exist special emotional system in brain for this kind of play (Panksepp, 1998). Evidence for this comes from experiments that show that juvenile rats will exhibit RTP even if they have been prevented from having any prior play experiences during earlier phases of development.

RTP includes different energetic behaviours, such as wrestling, grappling, kicking and tumbling, that happen in a play context (Pellegrini & Smith, 1998). RTP in most species shows same developmental time course. The amount of play increases during the early juvenile period, stays relatively stable through youth, and reduces after puberty (Panksepp, 1998). This kind of play can look pretty aggressive, so in today's society where there is increase in structured activities, parents often ban it concerned for children's safety. However, empirical evidence shows that this can be counter-productive. RTP provides young mammals with the opportunity to adjust their behaviour to a relevant context and influence the brain mechanisms that sup-

port social skills (Pellis & Pellis, 2009; as cited in Pellis & Pellis, 2012). Depriving young rats of play during the juvenile period creates lot of deficits, underlying them is an inability to reduce their emotional reaction to new or frightening situations, and this shows to be associated with social deficits. In humans, children that engage in more RTP tend to be better liked by peers, show better social skills, and have better academic achievements (Pellegrini, 2009; as cited in Pellis & Pellis, 2012).

It is believed that all different forms of human play are only higher elaborations on a single underlying PLAY system of the mammalian brain. “Just as each basic mammalian emotion can be expressed in many ways in human cultures-including dance, drama, music, and other arts - arousal of a single basic ludic circuit could add “fun” to the diversity of playful activities. In other words, PLAY impulses that are processed through the higher cognitive networks of the human cortex (i.e., via social constructions) may result in many seemingly distinct forms of human play. The common denominator for all, however, may arise from basic neuronal systems that were originally designed to generate RTP ludicity” (Panksepp, 1998, p. 283).

## Exploration

Like it for RTP, there is special emotional system in charge for explorative behaviour (Panksepp, 1998). The exploration is usually defined as behaviour that reduces uncertainty about the external environment through gathering of information (Power, 2000). Power (2000) gives this example of exploration:

*“When first introduced into its cage, each rat showed a marked degree of curiosity. It examined every corner and object within the inclosure, using mainly the sense of smell assisted by the sense of touch and to a still less degree that of sight. After about an hour of such investigation most of those in the revolving cages had found their way to the nest boxes in which they remained for a time”* (Sloanker, 1912; p. 23; as cited in Power, 2000; p. 36).

Exploration typically occurs when animal is for the first time exposed to an object or environment, or when there is some change in environment. Still, exploration is not only response to change – when novelty is to great fear and avoidance can also occur (Power, 2000). Several stimulus attributes will attract subject’s attention (e.g., stimulus changes, movement), but maintaining it over period of time depends on (a) physical properties of stimulus (e.g., number of visual elements or brightness contours, intricacy of configuration, responsiveness to manipulation, potential to change shape or move); and/or (b) novelty or discrepancy relative to the organism’s remembered experience (Weisler and McCall, 1976). In exploration organism expe-



riences “subjective uncertainty”, which he tries to reduce by acquiring information through attending, inspecting, manipulating, etc.

There are several characteristics and functions of exploration (Weisler and McCall, 1976). First, exploratory behaviour is common in different species of mammals and it is adaptive. Organisms have to be responsive to changes in stimuli, not to risk to die from predators or to notice in time changes in environment. Second, general form of exploration across species, specimens of a species and situation shows significant similarity, even stereotypy. Third, explorative behaviour typically occurs when there is a moderate amount of uncertainty. Fourth, in time of uncertainty exploration can be high-priority behaviour which causes basic biological needs to be set aside. Fifth, exploratory behaviour is usually performed while organism is in neutral or even mild negative affect.

## The comparison of play and exploration

Putting exploration and play in the same category can be problematic. According to Panksepp (1998) mammalian brain has separate circuits for social activities of roughhousing types (PLAY system) and separate for exploratory activities (SEEKING system). Every emotional systems has a characteristic feeling tone; for the PLAY system that is joy and for the SEEKING system that is “a psychic energization similar to feeling of anticipation that we experience when we actively seek thrills and rewards” Panksepp (1998, p.145). The critical circuits for SEEKING system are located in the extended lateral hypothalamic (LH) corridor. This system responds unconditionally to changes in organism (bodily need states) and in environment. Although the circuits for the SEEKING system are very well investigated that is not the case for PLAY circuits. The study of play circuitry still remains in its infancy, but using *c-fos* expression becomes evident that play elevates *c-fos* expression in such medial thalamic areas as the parafascicular, the hippocampus, and in many higher brain areas, especially the somatosensory cortex (Siviy, 1998; as cited in Panksepp, 1998).

Compared to exploration, play is more varied and complex, and may function to facilitate the acquisition of motor skills and to increase behavioural variability, and exploration is more stereotyped and functions to reduce uncertainty. Unlike what was previously thought, these both are intrinsically rewarding, still behind them are two distinct emotional systems. They are both inherent and innate, but they are not the same.

PLAY and SEEKING systems often operate in antagonistic rather than synergistic way. One example for that can be seen if we give psycho-stimulants, such as amphetamines, to animals or humans. Then RTP will be reduced and attention and

investigatory activities will increase (Klein, 1987; according to Panksepp, 1998). Other example can be seen when animal is placed in novel environment. It will usually exhibit exploratory behaviour with little tendency to play until it has familiarized with the new surroundings.

Although play reflects genetically inherent impulses of the nervous system, it requires the right setting for its expression. For example, bodily imbalances as fear and hunger can temporarily reduce play. In most mammals, play usually occurs in the secure and supportive base of the home environment, under the caring parent's eye. Indeed, play has been for a long time linked to the experience of positive emotions in animals (e.g. Burgdorf and Panksepp, 2006) and in humans (e.g. Clark & Miller 1998). In children, for example, play inhibition is one of the core symptoms of depression, both in standardized play tests and in free play situations (Lous, de Wit, De Bruyn, & Riksen-Walraven, 2002). Exploration on the other hand typically occurs when there is change in object or environment. It is linked to neutral or mild negative state, because evolutionary it is more adaptive to be cautious and aware in novel situations.

Because play and exploration are put to same category, it is possible that the SEEKING system is actually in charge for *object* or *manipulative* play. That makes difficult to determine to what extent the literature on the effects of "play" on psychological development reflects the functions of brain systems that control RTP, and to what extent those that control exploration (Panksepp, 1998).

#### Conclusion

Panksepp (1993, p. 177) suggests that "the main adaptive function of play may be the generation of positive emotional states. In such states animals may be more willing and more likely to behave in flexible and creative ways". During play mammals exercise also cortical functions independent of PLAY -related functions. Each basic emotional system energizes a number of different behaviours. Panksepp suggests that PLAY system generates this kind of emotional setting upon which learning can happen. So, possible purpose of PLAY system is to allow other emotional systems, especially social ones, to be exercised in the relative safe environment.

My assumption is that many benefits of play (especially RTP) come are by-product of positive emotions, which then cause other benefits in cognitive functioning. According to broaden-and-build theory, positive emotions widen their array of the thoughts and actions that come to person's mind. This means that young mammals will not exercise only learned skills, but also all sorts of new combinations of behaviours that can be useful in future life. Play differs from strictly functional expressions of behaviour structurally or temporally in at least one respect: it is incomplete (generally through inhibited or dropped final elements), exaggerated, awkward, pre-

cious, or involves behaviour patterns with modified form, sequencing or targeting (Burghardt, 2011). Compared to exploration, play is more varied and complex, and facilitates the acquisition of motor skills and increases behavioural variability, while exploration is more stereotyped and functions to reduce uncertainty (Power, 2000). Play appears more often in generalist species, especially those where offspring are protected by their parents for long periods before maturity. In generalist species play is more needed for the acquisition and refinement of various skills because they need to be able to adapt to changing environment.

In play young mammal's momentary thought-action repertoires are broadened, which gives them an opportunity to exercise new ideas and behaviours, and by doing so, they are also building enduring social resources. Play helps young mammals to exercise skills needed to be effectively assimilated into the structures of their society. This way they can safely find out who will bully them and whom they can bully, with whom they can develop cooperative relationship and whom they should avoid. They can exercise pro-social behaviour, e.g. courting and parenting behaviour, but also aggression (Panksepp, 1998). This way positive emotions and play are creating upward spiral. Through play, mammals are learning social skills which lead to better social relations and again experiencing positive emotions. Research even shows that depriving young mammals from RTP can be counter-productive for their development. Depriving young rats of play during the juvenile period creates lot of deficits, underlying which is an inability to reduce their emotional reaction to new situations (Pellis & Pellis, 2012).

In line with presumption that experiencing of positive emotions might over time build psychological resilience and trigger upward spirals toward improved emotional well-being, Panksepp (1993, p. 174) writes: "Other basic hypotheses concerning play which deserve more experimental attention are the possibilities that play is a "neuro-tonic" which can have antistress, health-promoting effects". Although, in the moment when he has written this chapter in book that hypothesis wasn't still proved he states: "One could also generate a variety of more specific fitness-promoting effects that may be enhanced by rough and tumble play, such as inoculation against social stress in future adult competitive encounters or perhaps the facilitation of social attractiveness so that reproductive potential is enhanced. It almost goes without saying that play must increase reproductive fitness in some way, but it should be noted that sexual-type behaviours are very infrequent during the course of rough and tumble play" (Panksepp, 1993, p. 174).

Exploration, on the other hand, occurs when organism is in novel environment. It is state of high arousal, which can easily become fear if change is too great. In this state is evolutionary adaptive not to try new behaviours then to act on previously

learned way. It is better to behave on evolutionary set “action-tendencies”. Also, it is adaptive to try to investigate object or environment as much as possible.

The broaden-and-build shows the impact of positive emotions on cognition which can be used for better and easier learning. Among other authors, work of Alice Isen and colleagues shows that positive affect leads to greater creativity (e.g., Isen, Daubman, & Nowicki, 1987), improved negotiation processes and outcomes (Carnevale & Isen, 1986), more thorough, open-minded, flexible thinking and problem solving (e.g., Estrada, Isen, & Young 1997). Positive affect has also been found to promote innovation, as well as both efficiency and thoroughness in decision making, and to enable improved thinking, especially where tasks are complex. Having this all in mind we should ask ourselves, why schools are so dull and serious? Why we don't take use more of recent findings and make schools happier places filled with play, where learning would be connected and reinforced with fun and joy?

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## Uloga pozitivnih emocija u igri i istraživanju

### Sažetak

Uloga emocija je da u organizmu pobude određeni set ponašanja i/ili da osiguraju potporu metabolizma za ponašanje povezano s emocijama. Emocije obično pobuđuju potrebu djelovanja na određeni način, no pozitivne emocije ne slijede ovaj model „akcijskih tendencija“. Umjesto toga, pozitivne emocije izazivaju promjene, prvenstveno, u kognitivnoj aktivnosti, a promjene u tjelesnoj aktivnosti mogu uslijediti. Fredrickson (2001) predlaže teoriju “proširenja i izgradnje” koja opisuje funkcioniranje pozitivnih emocija. Prema toj teoriji pozitivne emocije proširuju repertoar mišljenja i ponašanja osobe, ili, drugim riječima, povećavaju količinu misli i akcija koje osobi dolaze na um. To služi izgradnji trajnih osobnih resursa, od fizičkih i intelektualnih do socijalnih i psiholoških. U ovom radu težište je stavljeno na ulogu koju emocije imaju u igri i istraživačkom ponašanju. Iako se igra i istraživanje često stavljaju u istu kategoriju, njima upravljaju potpuno odvojeni emocionalni sustavi. Igra se najčešće javlja kada je organizam u sigurnom okruženju i relativno sretnom stanju, dok se istraživanje javlja nakon promjene u okolini i povezano je s neutralnim osjećajem iščekivanja. Kada je organizam u pozitivnom emocionalnom stanju, količina misli i akcija koje se pobuđuju u umu osobe se povećava. Stoga je osoba spremnija isprobati nova ponašanja što dovodi do razvoja novih sposobnosti. Istraživačko ponašanje se javlja kada je organizam u blago negativnom ili neutralnom stanju zbog čega se više ponaša stereotipno, a manje je otvoren novim tipovima ponašanja.

**Ključne riječi:** teorija proširenja i izgradnje pozitivnih emocija, gruba igra, istraživačko ponašanje