Do babies and adults feel the same in an aquatic programme for babies?

¿Viven las mismas emociones los bebés y los adultos en un programa de natación para bebés?

Authors

Gil Pla-Campas[1]*,
Verónica Jiménez[1],
Francesc Martínez-Olmo[2],
Montse Benlloch[1]

[1] Universitat de Vic – Universitat Central de Catalunya (Spain)
[2] Universitat de Barcelona (Spain)

*Corresponding author:
Gil Pla-Campas
gil.pla@uvic.cat

How to cite in APA

Pla-Campas, G., Jiménez, V., Martínez-Olmo, F., & Benlloch, M. (2025). Do babies and adults feel the same in an aquatic programme for babies? *Retos*, *66*, 555–564. https://doi.org/10.47197/retos.v66.112043

Abstract

Background. Interest in aquatic programs for babies has grown significantly, with many families participating worldwide. While numerous studies have examined the effects of these programs on motor development or aquatic learning, little attention has been given to the emotional experiences of the interaction. Understanding how emotions appear in each subject and how they influence the learning process opens a valuable area of exploration in early childhood motor development.
Objectives. The goal of this research was to explore the emotional responses of both subjects of the baby-adult dyad during an aquatic programme for babies, and their relation to the aquatic learning process of the baby.
Methods. Using a descriptive and intrasubject approach, the study observed fortnightly the emotional reactions to the aquatic motor behaviour of the babies of four dyads during a four-month aquatic programme. We designed an ad hoc system of categories of observation of the babies' behaviour and the emotional response of both subjects in levels of positive, neutral and negative emotions.
Results. The analysis of 1,962 individual emotional responses indicates that each dyad and their subjects behave differently and independently. Results show that an increase of tasks difficulty correlates with more positive emotional responses from adults. In contrast, there is no significant relationship between the difficulty of the tasks of the baby and its emotional responses.
Conclusions. Since this is a first approach to the study of emotions in aquatic programmes for babies, its results invite us to debate the relationship between emotions and learning.

Keywords

Motor learning; emotional response; dyadic interaction; baby swimming, aquatic programme.

Resumen

Antecedentes. El interés por los programas acuáticos para bebés ha crecido significativamente en todo el mundo. Aunque numerosos estudios han examinado los efectos de estos programas sobre el desarrollo motor o aprendizaje acuático, se ha prestado poca atención a las emociones que el programa estimula. Comprender cómo aparecen las emociones en la díada y cómo influyen en el proceso de aprendizaje abre una valiosa área de exploración en el desarrollo motor infantil.
Objetivos. El objetivo de esta investigación fue explorar las respuestas emocionales de la díada bebé-adulto durante un programa acuático para bebés, y su relación con el aprendizaje acuático del bebé.
Métodos. Utilizando un enfoque descriptivo e intrasujeto, el estudio observó quincenalmente las reacciones emocionales de cuatro díadas durante un programa acuático de cuatro meses. Se diseñó un sistema ad hoc de categorías de observación del comportamiento motor de los bebés y la respuesta emocional de ambos sujetos en niveles de emociones positivas, neutrales y negativas.
Resultados. El análisis de 1,962 respuestas emocionales individuales indica que cada díada y sus sujetos se comportan de manera diferente e independiente. Los resultados muestran que la realización de tareas motrices acuáticas más difíciles se correlaciona con respuestas emocionales más positivas por parte de los adultos. En cambio, no hay una relación significativa entre el nivel de dificultad del comportamiento acuático del bebé y sus respuestas emocionales.
Conclusiones. Dado que este es un primer acercamiento al estudio de las emociones en programas acuáticos para bebés, sus resultados nos invitan a debatir sobre la relación entre emociones y aprendizaje.

Palabras clave

Aprendizaje motor; respuesta emocional; interacción diádica; natación para bebés; programa acuático.

Introduction

The first experiences that babies have with water in swimming experiences would seem to be quite significant, as shown by the widespread use of swimming programmes for early childhood and the extensive research developed around them. One area that has generated much interest in the history of research on aquatic programmes for babies is the possible relationship between participation in such programmes and the motor and cognitive development of the child. Some of the latest research (Borioni et al., 2022; Wizer et al., 2015) points to the same result as the classic studies that have found a positive relationship between participation in aquatic programmes and their motor development such as Erbaugh (1986). But even with the widespread use and assumed benefits of early childhood aquatic programs, there is a significant gap in understanding how emotional responses within the adult-baby dyad influence motor development in infants. This study aims to fill this gap by exploring the specific emotional interactions between adults and babies during aquatic activities and their correlation with the babies' motor behaviour and learning progression.

Emotional factors involved in learning

Despite the existence of a general consensus that aquatic programmes are beneficial for social and emotional development in early childhood thanks to the dyadic interactions (adult-baby) on which participation is based (Latorre García et al., 2016), there is still little known about the reasons that can explain this phenomenon. On the one hand, the contribution of Asher (2003) stands out, who reports the positive effects on the motor experience, the attitude of the parents, self-confidence and adaptation to the nursery school. Other studies point to the type of interactions that occur between the baby and the adult. Specifically, Martins et al. (2020) observe that babies showing indifference or passivity is a possible consequence related to the large number of stimuli the babies are exposed to.

From a sociocultural approach (Vygotsky, 1978) learning, as well as modifying one's understanding of reality, transforms the meaning that this reality has for each person through a process of modification, ampliation or reconstruction of mental schemas (Piaget, 1985). The teaching process is understood as a guiding process and helps the learner's construction of knowledge in interaction (Onrubia, 1993; Vygotsky, 1978) around a learning content. Learning also implies an attribution of personal meaning that requires the involvement of emotional factors. Therefore, although understand that the emotional factors involved in learning belong to the learner, also know that they are built in the interaction with the expert around a learning content (Miras, 2001). Hence the importance of facilitating and building a suitable emotional atmosphere that enables the advancement of the teaching and learning process (Onrubia, 1993). Likewise, what has been characterized as "affective teaching" has a positive impact on the personal growth of learners and on their socialization processes (Shechtman & Leichtentritt, 2007). Moreover, many scholars agree that emotions play a crucial role in the learning process, and therefore, they can be even the basis for learning (Graham & Taylor, 2014).

Emotions involve sets of coordinated psychological processes including cognitive, motivational, affective and expressive components (Van Kleef et al., 2011). As cognitive emotional factors involved in learning, representations and expectations stand out that play a decisive role in interpersonal relations. Participants in the teaching and learning process use as criteria, among others, the idea they have of their own role and of the role of the other, the stereotypes and personal experience accumulated throughout their lives that help to create a certain image or profile of the other. This has an impact on mutual representations from which both actions are valued and have an effect on the attributions of successes and failures of learning (Jussim, 1986; Miras, 2001). These representations and expectations are directly related to individuals' beliefs in their self-efficacy (Bandura, 2001), which influence how they approach learning challenges and interpret their emotional responses to success and failure. As affective and expressive emotions, Pekrun and Stephens (2010) define achievement emotions. These are emotions directly tied to achievement and belong to work, study or participate in sports. Achievement emotions relate to activities that are usually judged according to competence-based standards of quality. Such as hope and pride related to success, or anxiety and shame related to failure.

The dyad as the context of childhood learning

Baby swimming programmes also forces to consider certain important aspects. First, water is an environment that involves risk to life due to the possibility of drowning. It is necessary to provide babies

with a safe environment that helps to reduce this risk (Brenner et al., 2009). In addition, the context is dyadic in nature since the father or mother are a direct part of the baby's activities (Ahrendt, 2002).

Safety, therefore, is an essential element of any aquatic activity, and in our context, it can be determined by the bond that the baby establishes with the adult. Interest in the bond arises from the studies on animal ethology by Konrad Lorenz, who demonstrated the primary bonds that babies establish with their caregivers (Lorenz, 1970). There are later theories related to early childhood (Ainsworth & Bowlby, 1991) that define the bond as a force that drives babies and the people around them with whom they has a special relationship to seek proximity and bodily contact over time. Within this framework various authors observe the broad type of bonds that determine the child's social-affective development (Ainsworth, 1985). These studies show the importance of the feeling of security that the adult confers, and how this security determines the processes of subsequent development (Bowlby, 2005) and the capacity of the baby to explore the environment in contexts of risk since the perception of risk requires mental and behavioural organization (Crittenden, 1999). Geddes (2006), for her part, studied the creation of bonds and their impact on security from an educational point of view. She observed that the building of secure and positive bonds is essential for the learner, i.e. the child, to carry out the task at hand.

At an early age, when verbal language is insufficiently developed, the interaction between expert and learner is also based on the perception and expression of emotions. This perception is related to facial recognition, which allows the child to identify basic and secondary emotions. This effect, known as "emotional dialog" (Mestre et al., 2007), has a common cultural basis and allows for incorporation into group processes (Birdwhistell, 1952). Understanding emotion is a very important aspect in the processes of interaction between children and adults since the child's interpretation of what the adult expresses and the response they end up giving depends on it. Emotional expressions are a potential source of social influence (van Kleef et al., 2019). Some authors attribute worse learning results when negative emotions such as anxiety, unhappiness and anger are experienced, or improvement in self-regulation when a combination of parental encouragement and support are perceived (Guil & Gil-Olarte, 2007). This self-regulation process, as a great goal of learning processes in general, ultimately seeks self-efficacy. In other words, the individual's ability to become aware of their learning process and make decisions to improve it, in such a way that enables them to achieve the desired performance (Graham & Taylor, 2014). The higher the level of self-efficacy, the greater the achievements achieved, since it allows individuals to direct their action and behaviour to achieve the proposed goals (Boekaerts et al., 1999).

While previous studies have emphasized the positive impact of dyadic interactions in early childhood aquatic programs on socioemotional development and learning (Alles-Jardel, 1988; Azémar, 1990; Le Camus et al., 1993; Brownlee, 2015), there is a significant gap in understanding how these dyadic behaviours and emotional bonds affect infant learning. This study aims to address this gap by focusing on the emotional responses within the adult-baby dyad and their relationship to the baby's motor learning in aquatic environments.

Research affirms that participation in early childhood aquatic programmes based on a dyadic relationship has a positive impact on children's socioemotional development and learning processes. Furthermore, emotions are essential factors for attributing personal meaning to it. This study focuses on the emotional responses that occur in the (adult-baby) dyad linked to the motor behaviour of the babies, and in this regard, the specific objectives of this study are:

- SO1. Describe the emotional responses to aquatic activity of a dyad in a programme for babies.
- SO2. Describe how emotional responses evolve during an aquatic programme.
- SO3. Describe the relationships between the emotional responses of the dyad and the difficulty of the aquatic motor behaviour of the baby.

Method

Research design

This study follows a descriptive and observational research design based on multiple case studies (Stake, 2005). It adopts a natural-context approach to human behaviour while employing quantitative methods for qualitative data analysis, ensuring systematic and replicable data collection.

Research sample

A non-probabilistic and intentional sample of four dyads, adult and baby, (n = 4), from two different age groups was selected. There were two selection criteria for the dyads: adherence to the programme and diversity of subjects. Adhesion is key to avoid gaps in the collection of information and to favour consistency and continuity of data when we know that the aquatic environment stimulates respiratory diseases. And diversity of the sample amplifies the relevance of the data. In our sample there was diversity in the age, sex and experience in swimming lessons for the babies and in gender for the adults of the dyad. Specifically, when the course began, the babies were aged between 10 and 27 months old (M=17.5 and SD= 8.35). Two babies were male and two females. Two had a year and a half of experience in aquatic programmes for babies, one six months' experience and one no experience. Finally, three of the four adults were female, and only one was male.

Procedure

Once the dyads were selected and before starting the research, the adult participants signed an informed consent with the general objective and procedure of the research. This research guarantees Spanish Organic Law 3/2018, of 5 December, on Personal Data Protection and guarantees of digital rights, and the General Regulation (EU) 2016/679, of 27 April, on data protection and supplementary regulations. Subsequently, the dyads were recorded fortnightly over the four months, from March to June, that the course lasted for each age group. Each observation session lasted 45 minutes and two babies were filmed per session, each for half a session. The filming was focused only on the dyad in question. By the end of the process, 11.2 hours of video and 1,962 individual behaviours had been obtained distributed as follows: dyad A, 480 behaviours; dyad B, 416 behaviours; dyad C, 628 behaviours; and dyad D, 438 behaviours.

Coding of behaviour

The behaviours of the dyad subjects, baby and adult, were subsequently coded and transferred onto a sequential grid that underwent an interrater reliability process. The emotional response was categorized in terms of "emotional valence" (Pekrun & Stephens, 2010) and can be distinguished from positive emotional valence, neutral emotional valence and negative emotional valence applicable to both the adult and baby. The table 1 shows the valences:

Table 1. Emotional valences and examples of their emotional responses in aquatic activity

Code	Emotional valence	Example
1	Positive	Responses that denote positive emotional reactions such as a hug, clapping, smiling or moving with joy
2	Neutral	Responses without positive or negative emotional sense, shown by indifference, inattention or distraction
3	Negative	Responses that involve negative emotional reactions such as crying, hypertonia, resistance, denial, rejection or scolding

Source: The authors

In addition to the emotional reaction of the dyad subjects, the level of difficulty of the aquatic motor task performed by the baby was also coded. Inspired by the proposal of Pla-Campas et al. (2022), this difficulty was coded according to the intensity of the action imbalance and the difficulty in breathing, based on increasing difficulty and intensity values, from 1 to 6.

For the analysis of the data, the Chi-square test of independence (χ^2) was used, given that emotional valence is categorical, and the data did not follow a normal distribution. The data obtained also allowed us to compute Spearman's Rho correlation coefficient (ρ) to assess the strength and direction of the difficulty of the motor tasks performed. Both the Chi-square test and Spearman's Rho analysis were conducted using the R program, while Microsoft Excel was used for calculating percentages.

Results

SO1. Describe the emotional responses to aquatic activity of a dyad in a programme for babies

The results show that the emotional responses of the four dyads together (Chi square = 103.84, df = 15, p < .001) are significantly related to the type of emotional responses. This would indicate that the emotional bond that might exist in each dyad belongs to that dyad and does not have any relationship with other dyads. We also observed that the emotional responses of the eight subjects are their own (Chi square = 18.85, df = 6, p = .004, for the adult and Chi square = 69.99, df = 6, p < .001 for the baby). It would also indicate that the emotional bond that is built in the subject depends exclusively on what the subject himself or herself experiences and perceives in relation to his/her individual environment. The following tables allow us to describe the emotional responses that were observed in the aquatic programme analysed:

Table 2. Percentage of adult emotional responses

Adult	Positive	Neutral	Negative
Dyad A	59.58	40.00	0.42
Dyad B	64.42	35.10	0.48
Dyad C	60.51	39.17	0.32
Dyad D	75.80	23.29	0.91
Average	65.08	34.39	0.53

Source: The authors

Table 3. Percentage of baby emotional responses

Baby	Positive	Neutral	Negative
Dyad A	30.83	46.67	22.50
Dyad B	28.37	59.62	12.02
Dyad C	52.55	42.68	4.78
Dyad D	37.90	43.38	18.72
Average	37.41	48.09	14.51

Source: The authors

From the two tables, we would highlight the individual differences that exist between subjects, with those between the adults being especially interesting. And with regards to the babies, the baby of dyad C stands out, showing a greater number of positive and less negative emotional reactions than the other babies. These results show the emotional differences of both subjects and that emerge from the same activities. All this describes both different experiences of the activity and emotional states for the same educational situation.

SO2. Describe how emotional responses evolve during an aquatic programme

The data set reveals that the emotional responses of adults, in addition to being independent of each other, is also independent of the sessions (Chi square = 37.4073, df = 14, p = .0006399). Similarly, the emotional responses of the babies are independent of the sessions (Chi square = 26.2869, df = 14, p = .02380). This would indicate that the emotional responses of each subject are specific to each session and do not evolve with them.

With respect to the session number, the results indicate a slight inverse correlation between the emotional responses of the adult and the session number of the aquatic programme for babies (r = -0.100, p = < .024). This would indicate that as the programme sessions progress, the adult shows more positive emotional responses. In a similar vein, there is a very small inverse and significant correlation between the session number and the emotional reaction of the baby (r = -0.071, p = .000). This, in turn, would also indicate that the baby would show a greater number of positive responses as the programme progresses.

SO3. Describe the relationships between the emotional responses of the dyad and the difficulty of the aquatic motor behaviour of the baby

The following table shows the evolution of the difficulty of the set of aquatic motor behaviours mobilized by the baby during the aquatic programme. As previously described, the difficulty level of the aquatic

motor tasks was rated on a scale from 1 to 6, based on the intensity of action imbalance and the difficulty in breathing control (Pla-Campas et al., 2022). The mean difficulty scores presented were calculated as the average difficulty level of all motor tasks performed during each session:

Table 4. Mean intensities of difficulty by session and subject at the beginning and end of the programme

Baby	First session	Last session	Increase in difficulty
A	2.1	2.5	0.4
B	2.2	3	0.8
C	2.4	4.2	1.8
D	2	2.3	0.3
Average	2.2	3	0.8

Source: The authors.

These data show that there was an increase in difficulty in aquatic motor behaviour of all the babies in the dyads. This is shown by the analysis of statistical significance since the overall increase in the difficulty of aquatic motor behaviour throughout the course is significant (Chi square = 78.38, df = 7, p = .000) in the group of subjects. Now, what is the relationship between this overall increase in difficulty and the evolution of the emotional responses? The results show a slight inverse and significant correlation between the baby's learning and the emotional accompaniment that the adult provides in the activity (r = 0.163, p = < .001). These results show that to the degree that the baby performs motor activities of greater aquatic difficulty, the adult shows more positive responses. In contrast, there is no significant correlation between the baby's emotional response to the activities and the difficulty of the activities (r = 0.048, p = .131). Therefore, the type of emotional response of the baby and the difficulty of the motor activity that it performs are shown as independent variables.

Discussion

The results obtained contribute several elements to the study of aquatic activities for babies. We will comment on those we consider to be the most important and which also enrich the educational debate for aquatic programmes for babies. The behaviour of the adult and baby groups is clearly different, which means that what happens in the dyad is specific to it and differs between the subjects that make it up and, also, between these and the other dyads. The differences in dyadic emotional responses to activity is consistent with previous dyadic researches in similar learning contexts (Pla-Campas et al., 2022) and could be showing the different modes of parental behaviour described by some authors (Alles-Jardel, 1988; Azémar, 1990).

Regarding the differences between the emotional responses of the adults and babies, we highlight that while the adults found the activity enjoyable and fun, for the babies it was very different as they showed more negative emotions. One hypothesis would be that the adult, by expressing mostly positive emotions, tries to make the bond that is created in the educational context a positive one (Geddes, 2006). And they experience it in this way, aware of the difficulties that access to autonomy in the aquatic environment entails, striving to create a positive bond in a context of risk (Crittenden, 1999). In line with Le Camus et al. (1993), we would understand these positive responses from adults as behaviours that stimulate learning.

With regards to the babies, the results indicate that they respond negatively to a significant percentage (14%) of the activities. The babies' understanding of the emotions of the adult is a very important aspect in the processes of interaction since the emotional response that the baby ends up giving to aquatic activities will depend on that interpretation (Guil & Gil-Olarte, 2007). However, in this case the understanding and emotional expression of the baby are undergoing development and it will not be until they are three years old that they have enough understanding to act accordingly, as shown by some studies (Mestre et al., 2007).

The results show a slight but significant inverse correlation between sessions number and the adult's emotional responses, as well as between session number and the baby's emotional responses. This suggests that as the programme progresses, both adults and babies exhibit more positive emotions. This can happen for two reasons. The first has to do with the learning results that the adult observes from

the baby as a result of the help and guidance he/she offers (Onrubia, 1993; Vygotsky, 1978). The greater the difficulty of the motor behaviour shown by the baby, the more expressions of positive emotions are observed in the adult. This indicates that the process of educational interaction that develops has an impact on the mutual representations and on the perception of progress in the aquatic environment that the adult observes in the baby (Jussim, 1986; Miras, 2001). For the baby, the increase in positive emotions during the programme may be due to the ability to attribute meaning to the learning (Miras, 2001), as well as the possible perception of greater self-efficacy that arises from achieving the goals proposed in the activity, which, in a way, is the result of a progressive increase in self-regulation (Boekaerts et al., 1999; Graham & Taylor, 2014).

The second reason that explains the increase in positive emotional responses is the improvement of the emotional bond of the dyad during the aquatic programme. An emotional and relational bond based on trust and security or, in other words, affective teaching (Shechtman & Leichtentritt, 2007), facilitates learning processes (Onrubia, 1993) and increases emotional expressions of achievement (Graham & Taylor, 2014; van Kleef et al., 2019). And as Geddes (2006) point out, a positive educational bond is an essential condition for the baby to carry out the task. These results coincide with those of other researchers that highlight he importance of establishing positive relational and emotional bonds to promote the development of the baby (Guil & Gil-Olarte, 2007) and that others have observed in the aquatic environment (Azémar, 1990; Le Camus et al., 1993; Pla-Campas et al., 2021). It should also be noted that the participants in the dyads are the parents. Studies link the participation of parents in school and extracurricular activities with an improvement in learning and the socialization process (Brownlee, 2015).

Progress in the level of difficulty of the babies' motor behaviour was also observed, which would denote progression in learning along the same lines observed in other studies (Pla-Campas et al., 2022). The results confirm that babies progressively engage in more difficult motor tasks throughout the programme. However, no significant correlation was found between the difficulty of these tasks and the baby's emotional responses, indicating that emotional state of the baby remains independent of motor difficulty. This suggests that learning is not always pleasant or a source of fun, an aspect which is linked to the cognitive epistemology theory (Piaget, 1985) that the very fact of learning produces and that generates insecurity, a feeling of incompetence and even frustration in specific moments of the learning process. In short, while the adult's positive emotions can be related to an increase in the possibilities of learning the aquatic skills of the baby, there is no similar relationship, nor in the same way, between the baby's positive emotions and its motor behaviour.

Conclusions

Our research has allowed us to verify some aspects that in our opinion may act as conclusions. The research reached its goal of describing the emotional responses of the adult-baby dyad in aquatic activities for babies, as well as the differences between the emotional responses of the dyads as a whole and of the specific adults and babies throughout the aquatic programme. Two conclusions need to be highlighted here. The first has to do with what happens in the dyads and the affective bond that exists between them. The study clearly indicates that each dyad and their subjects behave differently and independently. This reinforces the importance of focusing studies not only on learning outcomes but also on emotional and relational factors because the bond impacts the educational processes in a unique way. This means that learners have emotional factors that must be addressed and considered since they are unique and individual. The learning process is not always fun, playful and experienced in a positive way. Even in early childhood, learning generates a process of imbalance that provokes insecurity, suffering, feelings of incompetence and even fear. From the point of view of teaching, the expert must take these emotional factors into account to facilitate progress in learning as intrinsic elements. In the aquatic context of this study, promoting the creation of a positive educational bond in teaching and learning relationships is essential to promote a climate of security and trust due to the risk entailed in aquatic activity.

The second has to do with the differences in emotional responses between the subjects of a single dyad and between the dyads themselves. Although the dyads correspond to similar population groups, it is clear that the few cases studied show different realities since the diversity is not only of bonds and re-

lationships but also of particular emotional responses, which in turn produce different emotional environments. This highlights the need to design aquatic programmes with flexible sessions and activities that are adaptable to the affective bond of each dyad and the educational conditions that the context requires –both in terms of difficulty and in terms of internal management of the task– and to continue promoting the participation of parents in aquatic programmes for babies. Pekrun and Stephens, (2010) state that research should be interested in promoting adaptive (positive) achievement emotion environments and prevent maladaptive ones. Again, the uniqueness of the individual and dyadic emotional factors should be the basis for the design of aquatic programmes for babies.

Acknowledgements

We would like to acknowledge the valuable insights into motor learning gained from observing these four babies as they explored, not always joyfully, the water environment. Their curiosity has been truly inspiring. We also sincerely thank their parents for their trust and for allowing us to conduct this study, as well as the sports club for providing the environment that made this research possible.

Financing

No financial support was received for the conduct of this research or the preparation of this article.

References

Ahrendt, L. (2002). Baby swimming. Meyer & Meyer Sport.

Ainsworth, M. D. (1985). Patterns of infant-mother attachments: Antecedents and effects on development. Bulletin of The New York Academy of Medicine, 61(9), 771-791.

Ainsworth, M. D., & Bowlby, J. (1991). An ethological approach to personality development. American Psychologist, 46(4), 333-341.

Alles-Jardel, M. (1988). Comunication et interaction parents/enfants au cours d'activites aquatiques: Point de vue methodologique et ethologique. Bulletin d'Ecologie et Ethologie humaines, 7(2), 2-18.

Asher, D. (2003). The influence of directed aquatic activities for infants upon motor ability, parental attitude, self-image and adaptation in kindergarten aged children. En FAAEL (Ed.), 6ème Congrès International des Activités Aquatiques d'Eveil et de Loisir, Nantes (p. 24). Fédération des Activités Aquatiques d'Éveil et Loisir.

Azémar, G. (1990). Les interactions adults-enfants en situation à risques: L'approche de l'eau par les nourrissons. Science & Motricité, 10, 8-20.

Bandura, A. (2001). Social cognitive theory: an agentic perspective. Annual Review of Psychology, 52, 1-26.

Birdwhistell, R. L. (1952). Introduction to kinesics: An annotation system for analysis of body motion and gesture. University of Michigan Library.

Boekaerts, M., Pintrich, P. R., & Zeider, M. (Ed.). (1999). Handbook of self-regulation. Academic Press.

Borioni, F., Biino, V., Tinagli, V., & Pesce, C. (2022). Effects of Baby Swimming on Motor and Cognitive Development: A Pilot Trial. Perceptual and Motor Skills. https://doi.org/10.1177/00315125221090203

Bowlby, J. (2005). A Secure Base. Routledge.

Brenner, R. A., Taneja, G. S., Haynie, D. L., Trumble, A. C., Qian, C., Klinger, R. M., & Klebanoff, M. A. (2009). Association between swimming lessons and drowning in childhood: A case-control study. Archives of Pediatrics & Adolescent Medicine, 163(3), 203-210. https://doi.org/10.1001/archpediatrics.2008.563

Brownlee, L. (2015). Parental involvement in school benefits students and develops teacher-parent relationships. Journal of Initial Teacher Inquiry, 1, 54-56.

Crittenden, P. (1999). Danger and development: The organization of self-protective strategies. En J. I. Vondra & D. Barnett (Ed.), Atypical patterns of attachment in infancy and early childhood (Vol. 64, Número 3, p. 145-171). Blackwell Publishing.

Erbaugh, S. J. (1986). Effects of aquatic training on swimming skill development of preschool children. Perceptual and Motor Skills, 62, 439-446.

Geddes, H. (2006). Attachment in the classroom. Worth Publishing.

Graham, S., & Taylor, A. Z. (2014). Concepts and Structures of Emotions. En R. Pekrun & L. Linnenbrink-Garcia (Ed.), International Handbook of Emotions in Education (p. 23-45). Routledge. https://doi.org/10.4324/9780203148211-7

Guil, R., & Gil-Olarte, P. (2007). Inteligencia emocional y educación: Desarrollo de competencias socio-emocionales. En M. Mestre & P. Fernández (Ed.), Manual de inteligencia emocional (p. 189-215). Pirámide.

Jussim, L. (1986). Self-Fulfilling Prophecies. A Theoretical and Integrative Review. Psychological Review, 93(4), 429-445. https://doi.org/10.1037/0033-295X.93.4.429

Latorre García, J., Sánchez-López, A. M., Baena García, L., Noack Segovia, J. P., & Aguilar-Cordero, M. J. (2016). Influencia de la actividad física acuática sobre el neurodesarrollo de los bebés: Revisión sistemática. Nutrición Hospitalaria, 33(5), 10-17. https://doi.org/10.20960/nh.515

Le Camus, J. P., Emorine, N., & Simbille, P. (1993). Attachement et exploration en milieu aquatique. Science et Motricité, 20, 9-14.

Lorenz, K. (1970). Studies in Animal and Human Behaviour. Volume I. En Studies in Animal and Human Behaviour. Volume I. Harvard University Press. https://doi.org/10.4159/HARVARD.9780674430389

Martins, M., Costa, A., Costa, M. J., Marinho, D. A., & Barbosa, T. M. (2020). Correction: Interactional Response During Infants' Aquatic Sessions. Sports Medicine International Open, 04(03), E76-E76. https://doi.org/10.1055/a-1325-7487

Mestre, J. M., Núñez–Vázquez, I., & Guil, R. (2007). Aspectos psicoevolutivos, psicosociales y diferenciales de la inteligencia emocional. En J. M. Mestre & P. Fernández–Berrocal (Ed.), Manual de Inteligencia Emocional (p. 153-171). Pirámide.

Miras, M. (2001). Afectos, emociones, atribucions y expectatives: El sentido del aprendizaje escolar. En C. Coll, A. Marchesi, & J. Palacios (Ed.), Desarrollo psicológico y educación. Vol. 2. Psicología de la educación escolar (p. 309-330). Alianza Editorial.

Onrubia, J. (1993). Enseñar: Crear zonas de desarrollo próximo e intervenir en ellas. En C. Coll, E. Martín, T. Mauri, M. Miras, & J. Onrubia (Ed.), El constructivismo en el aula (p. 101-123). Graó.

Pekrun, R., & Stephens, E. J. (2010). Achievement Emotions: A Control-Value Approach. Social and Personality Psychology Compass, 4(4), 238-255. https://doi.org/10.1111/j.1751-9004.2010.00259.x

Piaget, J. (1985). Equilibration of cognitive structures. University of Chicago Press.

Pla-Campas, G., Benlloch, M., & Martínez-Olmo, F. (2021). Efectos de la interacción bebé-adulto sobre el aprendizaje de las destrezas acuáticas del bebé en un programa acuático. Una aproximación sociocultural. Revista Iberoamericana de Psicología del Ejercicio y el Deporte, 16(4), 49-53.

Pla-Campas, G., Jiménez, V., Benlloch, M., & Martínez-Olmo, F. (2022). Estudio de la evolución de la competencia acuática en bebés participantes en un programa acuático desde un enfoque socioconstructivista. *Retos*, *45*, 390–399. https://doi.org/10.47197/retos.v45i0.90342

Shechtman, Z., & Leichtentritt, J. (2007). Affective teaching: A method to enhance classroom management. European Journal of Teacher Education, 27(3), 323-333. https://doi.org/10.1080/0261976042000290822

Stake, R. E. (2005). Qualitative case studies. En N. K. Denzin & Y. S. Lincoln (Ed.), The Sage handbook of qualitative research (p. 443-464). Sage Publications.

van Kleef, G. A., Cheshin, A., Koning, L. F., & Wolf, S. A. (2019). Emotional games: How coaches' emotional expressions shape players' emotions, inferences, and team performance. Psychology of Sport and Exercise, 41, 1-11. https://doi.org/10.1016/j.psychsport.2018.11.004

Van Kleef, G. A., Van Doorn, E. A., Heerdink, M. W., & Koning, L. F. (2011). Emotion is for influence. European Review of Social Psychology, 22(1), 114-163. https://doi.org/10.1080/10463283.2011.627192

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. MIT Press.

Wizer, R. T., Valentini, N. C., & Castro De Souza, F. A. (2015). Descrição da evolução do comportamento motor aquático: Um estudo observacional. Revista Cinergis, 16(1), 33-38. http://dx.doi.org/10.17058/cinergis.v16i1.5949

Authors and translators' details:

Gil Pla-Campas	gil.pla@uvic.cat	Author
Verónica Jiménez	Veronica.jimenez1@uvic.cat	Author
Francesc Martínez-Olmo	fmartinezo@ub.edu	Author
Montse Benlloch	montse.benlloch@uvic.cat	Author
Paul Edward Marshall	pauledward.marshall@uvic.cat	Translator