

Using Behavior Analysis preventing and addressing racism in primary schools



HELLENIC REPUBLIC
PANTEION UNIVERSITY
OF SOCIAL AND POLITICAL STUDIES
RESEARCH COMMITTEE



Erasmus+



PRO DIFFERENCE



Erasmus+

**Using Behavior Analysis for
preventing and
addressing racism in
primary schools**



PRO DIFFERENCE ERASMUS+ PROJECT © 2021

www.pro-difference.com



HELLENIC REPUBLIC
PANTEION UNIVERSITY
OF SOCIAL AND POLITICAL STUDIES
RESEARCH COMMITTEE



actionaid



4CHANGE



Links for the images of Unsplash which are free to use

Original images:

Sharon Mccutcheon - https://unsplash.com/photos/TZZwC_xsCIY

Sharon Mccutcheon - <https://unsplash.com/photos/sbE9zbcuiZs>

Womanizer Wow Tech - <https://unsplash.com/photos/8oB43mw658c>

GR-Stocks - https://unsplash.com/photos/1ytUKz_Ms8U

Daniel Watson - <https://unsplash.com/photos/IEtUye-b28A>

Bernard Hermant - <https://unsplash.com/photos/Yfjl81rcY9M>

Bekah Russom - <https://unsplash.com/photos/Y8QTIwuzYSs>

Third Serving - <https://unsplash.com/photos/7h4ladPzhn0>

Robert Collins - <https://unsplash.com/photos/tvc5im05pXk>

Ben Wicks - <https://unsplash.com/photos/iDCtsz-INHI>



Introduction to behavior analysis, the natural science of human behavior

Behavior Analysis is the science of behavior. In order to clarify this statement, we need to explain what science is and what behavior is.

Science is the search for how things in our world work. We try to understand our world in order to have some control on the things that happen to us and as a result on the way we react to these things. What differentiates science from other types of search though, is the way it tries to understand the world.

Scientists do not do it randomly. They do it systematically. In other words, they use a method. The scientific method. This method involves defining your terms so as to be precise in what you are talking about, asking specific questions about the causes of events, isolating possible causal factors by using special techniques which are called experiments so as to know each time which causal factor is in effect, explaining the occurrence of events, predicting the likelihood of other similar occurrences in the future and uncovering patterns of occurrence. These constitute the Experimental Science. The next step is the application of the findings of the Experimental Science in order to improve our lives. This application of the findings constitutes the Applied Science.

As far as the science of behavior is concerned, scientists design experiments in order to understand our behavior and be able to change it if necessary. Only by conducting experiments can we provide evidence on possible causes of behavior since it is the only way to isolate causal factors. Other non-scientific methods such as tradition or experience and authority might incidentally appear effective in the short run but there is no way to assess their effectiveness in the long run and no way to replicate them because it is impossible to isolate the factors that really worked in each case.

Of course, if we conduct experiments in order to understand behavior, we must be ready to admit that what we have considered correct so far might not be the case. If we do not want to test our present views there is no reason to resort to science. In the same way that science in the past proved that although everybody thought from "experience" that the earth was flat it is round, we might end up realizing that our behavior works differently from how we have thought so far.

Behavior, on the other hand, is more difficult to define scientifically because it is a term which is used in everyday

speech so often that we think we are familiar with it. In everyday speech behavior is what we do. However, there are some problems with this definition of what behavior is. First of all, we are rarely precise when we refer to behavior. In fact, we rarely describe actions when we say what someone does. For example, when we say that someone's behavior is aggressive, do we mean that he hits others, he swears at others, he hits himself? When we say that someone is lazy, do we mean that he does not work at all, he procrastinates, he works slowly, or what?

All of these are different behaviors and must be dealt with in different ways. When we have a more precise definition of a behavior, we can begin to uncover the reasons why the behavior is occurring. However, the word behavior is used in such a vague way that it is impossible to know what was being observed. There are so many different ways for a person to exhibit being lazy or aggressive, that we have no idea of what was being witnessed. Generally speaking, when we define behavior, we have to be so precise that any person should be able to reliably state whether or not the behavior that we are interested in is occurring at any given instant. The reason we must be so precise is that if we do not know what exactly we are talking about we cannot change it. To put it simply, if we want to go somewhere we have to know where we are first.

Another problem with the definition of behavior is the fact that it does not offer any information about the circumstances under which it is being demonstrated. *When*, exactly, is the person lazy or aggressive? Every minute of the day, every day of the week, every week of the year? Is someone aggressive with his boss, his family, his pet, himself, all of them? Is someone lazy when he plays football, when he studies, when he works, in all cases? Apart from knowing what form of aggression or laziness has been exhibited it is important to observe what happened *before* the behavior occurred (the *antecedents* of the behavior or *discriminative stimuli*). In this way we have a more precise definition of the behavior which can lead to uncovering the causal factors of its emission.

It is equally important to know what happened *after* the behavior occurred (the *consequences* of the specific behavior). The consequences are important to know because they are functionally related to the antecedents. In other words, the antecedents influence behavior because they have been associated in the past with specific consequences. For example, if I am aggressive with my boss, I get fired but if I am aggressive with my pet I do not get fired. Or if I work hard at work, I make money but if I study hard at school, I rarely pass exams (so I work hard but do not study hard). I am not "lazy" at work but I am "lazy" when I study.

Science has discovered that specific consequences increase the likelihood that the same behavior will be demonstrated in the future under the same circumstances. Equally true, other consequences decrease the likelihood that the same behavior will occur again in the future under the same circumstances. This effect of consequences is very fundamental in understanding behavior. This is not a theory but the natural "law of behavior". For example, imagine you go to a store to buy milk and you always find the type of milk you want. In the future you are more likely to visit that store if you need milk. Now imagine that you go to the same store to buy pencils but you do not find any pencils there. You are not likely to visit this store in the future if you need pencils. Many important consequences are only produced by our behavior in certain places or at certain times.

Let's take another case that we have often witnessed in a supermarket. A child asks for chocolate. The mother says "No" and the child screams. The mother feels embar-

rassed and wants her child to stop screaming, and finally she gives the child the chocolate. Next time the child is more likely to start screaming when his/her mother refuses something in the supermarket or in a similar public space. The mother unintentionally has strengthened her child's undesired behavior.

Of course, based on the same principle, it is also possible to increase the probability of occurrence of desired behaviors. If the child asks for something politely, we want to increase the frequency of this behavior in the future, so we should reinforce this behavior—if not with chocolate, with a warm compliment for the polite request and an assurance that the child's wish will be fulfilled.

Another problem with the definition of behavior is the fact that behaviors are not always observed by others. What about behaviors that others cannot see? What about thoughts, perceptions and feelings, for example? Are they behaviors, or are they something different?

In Behavior Analysis, the definition of behavior includes our actions (walking, talking, sitting, etc.), our thoughts (privately observed talking and imagining), our perceptions (what environmental stimuli we recognize and our responses to them) and our feelings (often called emotions).

To conclude, the definition of behavior should include the *precise description* of the behavior exhibited (so as anyone can replicate it) as well as behaviors that are not observed by others such as thoughts, perceptions and feelings, plus the *antecedents* of the specific behavior and its *consequences*.

Explaining behavior

The reason we try to explain behavior is that if we find the causes, we can predict future instances that are likely to be demonstrated. However, finding the cause of a single instance of a behavior will not be very useful. We say that someone is lazy, or aggressive, or kind, or racist because very often he/she exhibits specific types of behavior which are part of a repetitive *pattern* of behavior. These patterns of behavior slowly and constantly evolve. In fact, our behavior changes so slowly that this change is hardly detected. If we don't see an instance of a behavior as part of a pattern, we might resort to many kinds of mentalistic analyses such as the notion of an unchangeable personality. If, for example, we see a student who does not sit at his desk once, we might say that the person is hyperactive, but it is more difficult to make such a mistake when a single instance of behavior is seen as part of a more general pattern. Is he also hyperactive when he paints pictures or when he watches cartoons? Where did his/her hyperactivity go in these cases? Finally, and most importantly, this very identification of such a pattern allows us to predict when another instance of the behavior is more likely to occur.

Why “racism” is not a cause of racial discrimination, emotion and aggression

Circular explanations that do not explain

In general, many statements made to explain behavior are circular. In other words they explain the behavior with the same behavior. For example, we say that a student cannot remain at his desk doing his exercises for more than 3 minutes at a time because he suffers from Attention Deficit Disorder. When we ask what evidence we have

that he actually suffers from this specific disorder the answer is the fact that he cannot concentrate on his exercises more than 3 minutes (which is exactly the behavior we are trying to explain). So, we explain the behavior that we are trying to explain by pointing to the same behavior!

As far as racist behavior is concerned, we often say that someone hates and is aggressive towards people of different race because he / she is racist. But what is a racist? A racist is a person that among other things hates and is aggressive towards people of different race. In other words, by trying to explain racist behavior with the same behavior we enter a vicious circle.

In science, we explain a phenomenon with another phenomenon which is independent from the phenomenon we try to explain and which is called independent variable. The phenomenon which requires explanation is called dependent variable because its level depends on the level of the independent variable. As the level of the independent variable varies, the level of the dependent variable changes accordingly. For example, the level of your blood sugar changes when the quantity of sugar you consume changes.

Testing of independent variables

A statement may satisfy the requirement that the "cause" is different from the behavior being explained and still not be a true statement. To determine whether or not a variable is responsible for behavior, you must test it. It is tempting to attribute the cause of a behavior to something which happens at the same time, particularly when it agrees with your beliefs. Suppose, for example, you have a nursery school child who wets her pants some days of the week. The same days the child had a large soft drink for breakfast and the days that he did not wet his pants his mother sprayed him with holy water but he did not consume a lot a liquids. Which is the cause of wetting and not wetting his pants?

Your judgment will be made upon your beliefs and prior knowledge about the effects of drinking on urination. If you believe in the effectiveness of holy water you will conclude that the child did not wet his pants the specific days because of the holy water. If you know the effects of drinking liquids and urination you will conclude that the child wet his pants because he had drunk a lot of soft drinks. In scientific research you would spray the little boy with holy water all the days and give it a lot of soft drinks only one day to see if he would wet his pants on that day. Then the cause of urination is evident that it is the amount of liquid he had consumed. Or you could offer the boy the same amount of soft drinks and water every day and spray it with holy water only one day. If he did not wet his pants the day he had been sprayed with holy water then we can conclude that holy water was effective in preventing urination.

"Causal" variables that are not helpful in explaining behavior

Many "explanations" of behavior that have no practical value circulate very widely. Most refer to internal "agencies." Because there is no evidence for their existence, they are also called hypothetical constructs.

These "agencies" are said to be inside the brain. Many people appeal to many hypothetical constructs as explanations of behavior. Two popular constructs are "long-term memory" and "short term memory" although no one has ever seen them. They are intended to explain the very behaviors for which they are the evidence, making them classic cases of hypothetical constructs. The problem is that even if we suppose that they exist they offer nothing in our attempt to predict or change any behavior.



Some of the “internal” explanations for behavior have independent evidence. Neuroscience is an example. We can observe some of what is going on inside the brain when, for example, a person is happy or sad. As people behave, the connections between nerve cells change. The useful question to be asked is why these connections change and why the behavior changes at the same time that the behavior changes. In other words, instead of saying that the behavior changes because of the change in the connections it is more useful to ask what is the cause of both the change in the behavior and the change in the connections.

The physiological workings of the brain will never tell you how to teach mathematics or reading. Only an analysis of how behavior interacts within its environment will give you solutions to these problems. Moreover, you can prescribe medication to change the physiology of the brain but no medication will make someone learn a language or find a solution to a problem.

Developmental Stages and Behavior

Developmental stages are not helpful explanations when they are used to explain why a child behaves a particular way. Piaget’s analysis is useful in describing which skills usually appear at a certain age and with which order, but stages do not explain behavior. Our body parts mature, but the passage of time is not the reason for specific actions. A child does not talk because three years have gone by, but because of the physical growth and interactions that have taken place during that time. The child will not speak English just because he/she is three years old if he/she does not listen to English. Even height and weight are not a function of time. Without food and water, no growth would occur. What happens during that time brings about the change, not the ticking of seconds on a clock. The field of development contributes in describing which skills are prerequisites for others. It describes the sequence of the skills and not the cause of the skills. So, if a child is three given the favorable environmental conditions will be able to talk.

Why Future Goals and Expectations are Not Useful as Causes

In daily speech we often attribute actions to some future event, as in the statement, “Mary is studying in order to pass the exam.” An event in the future cannot have an effect on an event in the present because if the “cause” does not happen (if Mary fails the exam), how can we explain our explanation then? Mary’s studying could not have been caused by passing the exam she didn’t pass. Then someone might argue that she studies not because she will pass the exam but because she expects to pass the exam. In that case we still have a problem. Where did the expectation come from? Why does Mary expect to pass and she studies and John does not expect to pass and he does not study? And more importantly how

can we make John expect to pass so as to study? Perhaps Mary in the past has passed exams by studying. We then have a full analysis which leads to a useful explanation: Passing exams in the past by studying leads to expectancy of passing an exam by studying which in turn leads to studying now. So, if we want to make John study, we have to create conditions of succeeding in exams when studying in order to make him expect that he will pass if he studies which will lead him to studying. So, studying is a function of having passed exams by studying in the past. And since the present is the past of the future if we want a student to study in order to pass exams, we must set the conditions so as to pass exams when he/she studies.

Genetic Endowment and Its Role in Behavior

Heredity plays an important role in our behavior. The short person will not be likely to play on a basketball team. But not any tall person will be able to play on a basketball team. Some will and some will not. Something in the different environments produces this difference. If you do not practice you will not be able to play well. So, heredity alone cannot be a cause of behavior. While genetic makeup partly determines tendencies, it cannot account for specifics of what we do and when we do it. Most people attribute too much to genetic endowment. Behavior is very susceptible to environmental influences. It is a product of our genetic endowment and all the moment to moment interactions we have had since birth. Even such basics as the language we speak comes more from our environment and less from our genetic endowment.

Which environment is the cause

We live in many different physical and social environments, each of which shapes different behavior. We tend to behave differently in different environmental conditions. We behave differently at work from how we behave at home. When explaining behavior in one setting, it is tempting to look for its explanation in something going on in another setting. Of course, patterns of behavior that have been established by a lifetime of past experiences influence our behavior, but what anyone of us continues to do or begins to do differently in a setting depends upon the contingencies set up within that environment. Our behavior which has been shaped by past experiences shapes our environment and then our environment further changes our behavior. However, instead of leaving all this reciprocal control to be influenced by incidental factors we can utilize the science of behavior and do it in a systematic and beneficial way. Environment controls our behavior and we control our environment whether we are aware of it or not. It is not a matter of opinion or values. It is a natural law which can be used to our advantage for a better life for us and the people around us.

Distinguishing the structure of behavior (what we do) from its function (why we do it)

Structure/ topography

The structure of a behavior is the way it looks, an aspect of its choreography. It is the physical form that a piece of behavior takes. Take, for example, walking. This can include many different types of behavior (the speed, the position of the body, the distance covered, the duration, support needed, frequency of walking). What appears to be a simple behavior can turn out to be quite complex.

Probably the most common dimension of behavior is its *frequency* - how often or seldom a particular behavior takes place. We may want to increase how often a person walks, or we may want to decrease how often a person consumes sweets.

Duration is another dimension of behavior which can be changed. It refers to how long a person engages in a particular behavior. For example, we may want to increase the amount of time a child spends doing his homework but decrease the amount of time a child spends watching TV.

Response time is the time between the end of one event and the beginning of another. For example, it is important to know how long it takes a child to start working on his worksheet after he/she has been given the instruction to do it. The teacher would expect this to take only two or three minutes. For some behaviors response time can be long. For example, if you ask a child to tidy up his room you do not expect him/her to start doing it in a few minutes. You would be equally satisfied if he did it during a day. Other behaviors have very shorter response time. Imagine a child running towards the road. When you say "Stop!!" you would like an immediate response.

Function

Why does John hit Peter? Why does Janet complete her worksheet in a few minutes? Whenever you ask "Why?" you are asking for conditions or events upon which behavior depends. The answers have a stated or implied "because": John hit Peter because he wanted to appear strong to his peers. Janet completed her worksheet in a few minutes because after completing her homework she is usually offered the opportunity to play her favorite computer game. The question "Why?" is answered by identifying functional relations between the behavior you are investigating and factors that determine whether or not it occurs (the behavior is the dependent variable and the factors that determine whether it will occur or not the independent variable and the relation between them a functional relation). If Janet completes her worksheet and instead of being given the chance to play her favorite computer game she is given more homework her behavior will probably change accordingly. She might delay the completion of her worksheet until the end of the class session.

Many independent variables may be involved. John hit Peter only if his friend are present, or when there is no teacher present or both. A functional relation specifies the relation between the behavior to be explained and one or more of the variables that affect that behavior. In most cases, functional relations between behaviors and environmental factors are not so precise that one can give the exact value of the dependent variable by knowing the value of the independent variable. However, we can at least predict the direction of change once a functional relation is found.

For example, you may not be able to predict the exact minutes that Janet will delay completing her worksheet if she is given two or three extra worksheets after the completion but we can predict that she will delay it to a certain degree. Other factors might play an important role such as the praise that the teacher offers after the completion of the worksheet, the difficulty of the exercises she is asked to do, even self-produced kinesthetic or sensory reinforcers produced by the same behavior of doing the exercises. Any functional relation holds only within certain limits. All "laws" of science work within constraints. Only when certain conditions are met does a particular functional relation apply. A functional analysis tries to find dimensions of the setting that are related

to the possibility of specific behavior to occur. In other words, the function of any given behavior is the reason why it is demonstrated.

Certain behaviors might have the same structure but different function. For example, John's hitting Peter during a school theater play has a different function from John's hitting Peter in the school playground. Equally true, certain behaviors might have different form but the same function. If Caynor screams or stumps her feet in the supermarket to make her mother buy her the chocolate she refused to buy, the two behaviors have different structure but the same function (to get the chocolate).

Distinguishing among two types of behavior: acts, attitudes and thinking (instrumental behavior) vs. feelings or emotions (reflexive behavior)

Operant Behavior is a term to describe the behavior that "operates" on the environment and it is distinguished from the "respondent" behavior which is caused by a stimulus which preceded it. You can explain a respondent eyeblink by referring to the stimulus that preceded it: "Peter blinked his eye because bright light was directed to his face." Operant behavior differs. If you tell Peter, "Blink," he may or may not blink. In order to predict the likelihood of Peter blinking or not you must look at the past consequences of his blinking when he is told to do so or the past consequences of his following directions.

Most actions are operant. Their causes lie in individual past interactions in their environment. Patterns of actions are always changing, adjusting to the consequences that immediately follow the behavior. Not everything a person does is repeated. Only some operants are "selected" by consequences to become stronger and more likely to become part of a person's behavioral pattern. This strengthening of behaviors through their consequences is called operant conditioning and it goes on all the time. Even before our birth, behavior begins its evolution through the interplay of genetic and environmental factors. How patterns of behavior appear, how they change or why they stay the same constitute the laws of the science of behavior.

Behavior analysts do not appeal to "inner agencies" as causes of behavior. A person does not avoid speaking to another person of different race because he is a racist. He avoids speaking to another person of different race as a result of consequences that have strengthened the behavior of not speaking to specific people. That's good news, because consequences can change and as a result patterns of behavior can change.

Instrumental (operant) behavior and its relation to its consequences: The principle of reinforcement and the operant class

When a behavior is followed by a consequence which increases the future likelihood of that behavior happening again we call this "reinforcement". The behavior becomes strengthened. It is important to note that reinforcement is defined functionally. A stimulus is reinforcing only if it increases the likelihood of the behavior (of which it is an immediate consequence) happening again and not if it is generally considered pleasant. In that sense a bar of chocolate might not be reinforcement if it does not increase the possibility that the behavior will happen more often in the future. Equally true, shouting at someone might be reinforcement if it increases the possibility of the behavior (of which shouting was an immediate consequence) happening again.



Naturally, there is not only one form of behavior that has one form of consequence. Different forms of behavior might bring about the same result. For example, if I want to go to my office I might walk, or drive my car, or bike, or take a taxi, or take the bus. All these actions will have the result of reaching my office (consequence). Operant class is the term used to define the behaviors that have the same consequence. This is very useful to know because if we want to change the behavior it is important to change the consequences for all or one of the behaviors belonging to the same operant class depending on what we want to attain.

For example, if we want to decrease the frequency of a temper outburst which has a consequence of getting chocolate, we must not reinforce all the behaviors that belong to this operant class (shouting, stamping feet, throwing things etc.). Accordingly, if we want to increase the behavior of “asking politely” we must reinforce all the behaviors of this operant class (saying “Please can I have a piece of cake”, “Could you please pass me the salt”, etc.).

In other words, a reinforcer is effective in changing behavior if there is no other behavior available which belongs to the same operant class.

However, what is reinforcing for one person might not be reinforcing for another person or what is reinforcement in one stage of our life might not be reinforcing in another stage. For example, some children like toy cars (toy cars are reinforcing) and other children like board games (board games are reinforcing). Some people like playing chess and other people hate it. Also, when you were a young child, a certain kind of candy may have been very reinforcing, but not in your adulthood.

Those are changes that might be demonstrated across individuals or over long periods of times for the same individual. However, shorter time changes might happen very often. If you have eaten a lot of ice cream during the day by the end of the day it might not be reinforcing anymore. To the contrary, if you have not eaten anything for many hours and only broccoli is available although you usually do not like broccoli it will be very reinforcing (at least until you satiate your hunger).

This is the effect of processes which are called *satiation* and *deprivation* and they are the two sides of the same coin which is called *reinforcing potency*. If an individual hasn't had access to a specific reinforcer for a long time then for at least a short period of time its reinforcing potency will increase. On the other hand, if an individual has had access to a reinforcer for a long period of time its reinforcing potency at least for a short period of time will decrease. As a result, if we are to use something as a reinforcer it is wise to restrict access to it for a sufficient period of time so as to increase its reinforcing potency.

In other words, children should not have access to the reinforcers we use during an intervention program before the session. In the same way if we are to go to party and we are on a diet it is wise to eat something healthy before we go so as to decrease the reinforcing potency of food and avoid consuming a lot of unhealthy dishes.

Things that can function as reinforcers

Tangible reinforcers: These are things we can touch such as foods, drinks, toys, etc.

Social reinforcers: These are things we get through interaction with another person such as attention, hugs, kisses, smiles, verbal praise, etc.

The chance to engage in favorable activities: These are things we can do such as play sports, listen to music, watch TV, bath, etc.

Reinforcers of generalized effectiveness that can be exchanged for a large range of reinforcers. The most common reinforcer of generalized effectiveness is money. We can exchange it for food, drink, activities, etc. For children instead of using money we can use a token board. Children demonstrate various desired behaviors that are reinforced with tokens. When the child has filled the token board (e.g., 20 tokens) she/he can have access to a preferred activity, a favorite food, a video, etc., or any other reinforcer.

How instrumental behavior is affected by its consequences: Differential reinforcement, extinction, and the induction of new forms of behavior

Stimulus Discrimination Learning

This is the product of learning through differential reinforcement when we learn to emit a specific behavior in the presence of some stimuli but not in the presence of others. For example, in the presence of the question “What is the capital of Italy?” a child will respond “Rome”. The question is a stimulus, and the correct answer is the behavior that has been reinforced previously in the presence of that stimulus.

Equally true, the question “What is the capital of Italy” is a signal that the response “London” or “Athens” or any other answer except “Rome” will not be reinforced since similar answers in the past have not been reinforced. Any antecedent stimulus that leads to behavior that is then reinforced (the consequence) becomes a stimulus that signals the availability of reinforcement when it occurs again in the future. This stimulus is called a *contextual stimulus* because it is a stimulus that signals the availability of reinforcement. What has been described above is directly related to a three-term contingency. More specifically, a particular behavior is more likely to occur in the presence of a specific stimulus because that behavior has been reinforced in the past in that context and not elsewhere.

Extinction of a behavior

We often hear in everyday language that if we ignore a problem behavior it will go away. This process is described with the term *extinction* in Behavior Analysis and it is one of

the principles of behavior. The principle of extinction states that if a behavior that has been reinforced previously is no longer followed by a reinforcing consequence, then this specific behavior will be less likely to occur in a similar situation in the future. In simple words this means that if we want to decrease the frequency of a specific behavior in the future we remove the reinforcer keeping in mind of course that we must avoid settings where the same reinforcement will be accessible with other forms of behavior which belong to the same operant class. There are two types of Extinction used when dealing with inappropriate behaviors.

Social Extinction involves ignoring a response in order to decrease the future likelihood of the behavior taking place. For example, consider a child who swears in order to get parental attention. The parents had previously inadvertently reinforced the child's behavior by providing attention in the form of reprimand. However, if the parents remove the reinforcer by ignoring the child's behavior of swearing when he swears they will have put the child's behavior on extinction.

Sensory Extinction involves removing sensory stimulation that reinforces a response in order to decrease the future likelihood of the behavior. For example, imagine a child tapping on a metal object because the sound stimulates him/her. If the parents put away the metal object we say that the parents have put the behavior of tapping on the object on extinction.

Unfortunately, extinction is not as simple as it first seems and several things have to be taken into consideration:

The Extinction Burst

When a behavior is not reinforced as it used to be, it will increase in frequency, duration, or intensity for some time before it decreases. What happens when your friend does not answer your phone call? You don't stop calling at once. You may call for several times more frequently than usually before you stop. So your behavior temporarily increases before it stops. This change in behavior is observed in almost any case that a specific behavior is put on extinction. It is very important to understand this effect of extinction because if we are not familiar with it and we see this temporal increase of the behavior we have put in extinction we might think that the procedure has failed and we might give up. But the opposite is the case.

If we remove a reinforcer and we see an increase in behavior that means that what we have removed is the actual reinforcer (the consequence that kept the behavior going). More importantly if we stop during the extinction burst, we may inadvertently reinforce the burst of responding which means that in the future there is probability to observe a higher frequency of the behavior since this higher frequency has been reinforced (when a behavior is reinforced all its dimensions are reinforced at the same time including frequency).

Extinction-Induced Aggression

When we introduce extinction, we might observe that an emotional behavior in the form of aggression or annoyance has been emitted. Stimuli produced by the process of extinction cause undesired reactions. The stimuli produced by the respondent behavior in turn will probably emit aggressive actions. For example, when our computer fails to start we might curse it or hit it.

Spontaneous Recovery

When a behavior has stopped due to extinction it may occur again in similar situations even after a long period of time without having been reinforced again. This phenomenon is known as Spontaneous Recovery. In such a case we must be careful not to inadvertently reinforce this specific behavior which has been recovered by paying attention to it because the effects of extinction will be lost.

The Effective Application of Extinction

When we remove a behavior from someone's repertoire, we are creating a "behavior vacuum". Another behavior will fill that vacuum and we must take care that this vacuum will be filled with an appropriate behavior and not another undesired behavior. So, it is very important to reinforce desired behaviors at the same time that we put undesired behaviors on extinction so as to fill in the vacuum with these behaviors that have been reinforced and their frequency has been increased. For example, if parents decide to put the undesired behavior of swearing on extinction (by not attending to it) at the same time they must reinforce every instance of polite speaking so as to increase the frequency of polite speaking and fill in the vacuum which will be left after the extinction of swearing.

Extinction of desired behaviors

As it is possible to inadvertently reinforce inappropriate behavior it is also possible to inadvertently put appropriate behavior on extinction. Take a child who is playing quietly and no one pays attention to what he/she is doing. In this way we are putting the desirable behavior of playing quietly into extinction. Even worse when the child starts complaining or shouting, we focus our attention on his/her behavior and in this way, we reinforce the undesired behavior of complaining and shouting with our attention. What we must do is pay attention to the child's behavior when he/she is playing quietly (we can stop what we are doing and give the child a hug) and ignore his/her behavior when he/she is shouting or complaining.

Reinforcing behaviors incompatible with undesired ones

We can also decrease the frequency of occurrence of one form of behavior by not using extinction if we want to avoid extinction burst and extinction-induced emotional reactions. A response can be decreased by allocating more reinforcers to other behaviors.

If the frequency of one behavior increases then due to the economy of behavior the frequency of another behavior will decrease. We only demonstrate a limited number of behaviors at a certain period of time. This is more so the case, when we can allocate more reinforcers to an incompatible behavior. For example, if we want a child to sit at his desk, we pay more attention to that behavior instead of paying attention to the behavior of standing up even if we cannot put it on extinction immediately. Eventually the behavior which is more frequently reinforced (sitting at the desk) will take over the behavior which is rarely reinforced (standing up).

Teaching new skills with the same function as the undesirable behaviors

Undesirable behaviors will decrease when a desirable behavior produces the same consequences. For example, if a child points to a biscuit to get it we can only give him/



her a biscuit when he/she says biscuit or a verbal response which sounds like the word biscuit depending on the child's communication skills.

As the child learns to communicate verbally to ask for food by using normal requests, it is likely that she/he will stop pointing. This whole process happens quickly if the people in the child's environment do not pay attention when the child points and at the same time reinforce immediately the appropriate verbal requests for obtaining food.

Teaching New Skills

By reinforcing a behavior which already occurs, we can readily and successfully increase its frequency. However, what do we do if the behavior we want to reinforce occurs very *infrequently* or does not occur at all? We may be waiting for ever and still not be able to catch this behavior occurring. In this case we must apply a method which is called shaping.

Shaping

Shaping is the development of a new behavior by the successive reinforcement of closer approximations to the target behavior and the extinction of preceding approximations of the behavior.

This is actually how parents usually teach their babies talking. When presented with a biscuit the child may make the vocal sound "coo." The child is then given the biscuit as a reinforcer for engaging in "talking behavior." As the child develops and becomes more competent with language her parents begin shaping her behavior.

In the presence a biscuit the vocal sound "coo" is no longer reinforced with a biscuit. The child is now expected to say "bicoo" in order to get the biscuit. In other words, "coo" is put on extinction and "bicoo" is now reinforced.

Behavior may be further shaped so that the word "biscuit" will only be reinforced with a biscuit and all the other precedingly reinforced sounds will be put on extinction. Shaping can and will naturally go on until the child says "want biscuit" and then until the child says "can I have a biscuit, please" so that utterance of phrases will be shaped.

Various dimensions of behavior can be shaped:

Structure - the physical form of a response. For example, we can help a child hold a pencil in a better way which will help him/her write faster and more neatly.

Duration - how long someone engages in an activity. We could help someone increase the length of time he studies by reinforc-

ing first any five minutes of studying then ten minutes of studying and gradually increase the time of studying required in order for reinforcement to be provided.

Intensity - the force of a response. We can shape the intensity of the voice a shy child uses when talking in class.

Speed – how quickly or slowly the action occurs.

In order to make shaping effective various things must be taken into consideration:

We must specify the final desired behavior clearly.

We do not want to move forward too quickly in case the child is being asked to do too much too soon. We only move forward when the previous approximation has been well established. However, if the person stops learning because we move too quickly we must not be afraid to return to an earlier step to get the behavior running again.

On the other hand, we also do not want to move too slowly as a long period of reinforcement at one step will strengthen the behavior so much that it will be very difficult to change it.

Finally, we must move in small steps. If in doubt we choose the smallest step of all we have considered. We cannot expect someone who studies only five minutes a day to move to five hours the next day. This would have been too great an increase and he probably would fail.

Distinguishing between positive reinforcement and negative reinforcement

There are two types of reinforcement. Positive and negative reinforcement. Whichever the type, reinforcement is what *increases* the likelihood of a form of behavior to occur again in the future.

Positive reinforcement

This is a type of reinforcement in which a stimulus is presented immediately after the occurrence of a behavior and as a result the frequency of the occurrence of this behavior in the future increases. For example, a child who is playing quietly is given a hug and the likelihood that the behavior of playing quietly in the future will increase.

Negative reinforcement

This is a type of reinforcement in which an annoying, frightening, painful, disgusting or otherwise aversive stimulus is removed as a result of the behavior. So, the word negative is used to refer to removal or subtraction of a stimulus as a consequence of behavior. For example, if we are out walking and it starts to rain, we can terminate this aversive stimulus by opening an umbrella. If a neighbor is making a disturbing noise and we ask him to stop, our request will be negatively reinforced by the termination of the noise, and we will be more likely to behave in a similar manner the next time someone is disturbing us. Similarly, if we have a headache and taking an aspirin stops the pain, then the likelihood that we take an aspirin the next time we have a headache will increase.

Differential reinforcement and extinction across contexts: The root of all knowledge

How we learn

Since the moment we are born we learn about our world through the processes of reinforcement and extinction. Our behavior is reinforced when we respond in a certain way to a specific feature of our environment and our behavior is extinguished when we respond to any other way.

For example, a baby finds a piece of cake on the floor puts it in her mouth and this behavior is reinforced with the sweet taste in her mouth. Then she finds a piece of paper on the floor tastes it and her behavior of putting things she finds on the floor in her mouth is extinct. So, she learns the concept of sweet food.

In another instance a little child says mum and the smiling face of her mother appears. Then she utters a non-sense word and nothing happens. So, she learns the word mum. Again, in another instance the child sees a red color, says red and her behavior is reinforced with some kind of social reinforcement. If she says green at the sight of red nothing happens. So, she learns the concept of red. This is called stimulus discrimination.

But what happens if the concept we are asked to respond to consists of more than one features (which is the case most of the times in our world)? The feature which will prevail depends on our individual history. If you are a child that has learnt the colors but not the shapes yet and you are shown a red triangle when you are asked to respond to it you are going to say red. But if you have learnt both colors and shapes and you are shown a red triangle you will not be sure about the right response and you will need precursor action before you respond. You will either ask if you are supposed to respond to the feature of shape, color or both or you will have to take some precursor action mostly by thinking which is appropriate in each situation.

If you are having a Geometry lesson you might say triangle but if you are having an Arts lesson you might still not be sure and you will have to take further precursor action in the form of a chain. Again, you might have to ask for supplementary discriminative stimuli or think about the task you are performing at the moment. Are you designing shapes or painting a landscape with flowers? In any case in order to make the correct response to the discriminative stimulus of a red triangle you must behave in a chain. This chain is similar to any chain of behavior when we are asked to solve a problem.

The three-term contingency between context, action and context

Three term contingencies

No behavior takes place in a vacuum. All behavior occurs in a setting and when the consequences of actions differ in different situations, people learn to respond appropriately. Imagine a stranger in the street asking you to undress. You would run away terrified. Now suppose that a physician giving you an important examination asks the same thing. In that context you would immediately comply without any hesitation. Depending on the past consequence of a behavior in a given setting, this setting will signal the possible consequences in the future if a specific behavior is emitted. This relation is called a three term contingency.

Differences between Antecedent Control in Respondent and Operant Conditioning

The control of antecedents over operant behavior differs from the control of antecedents in respondent behavior. Respondents involve reflexes where the responses are explained solely by identifying the preceding stimulus. If “jumping” is a reflexive response to a loud sound, you can explain the behavior by identifying the preceding noise. The jump is elicited. Jumping when told to jump, on the other hand, cannot be explained by the prior stimulus alone. It is an operant, controlled by the consequences for jumping when told to do so. A student may or may not jump.

The relationships between an operant, the consequences that maintain it and relevant antecedents in the situations in which it occurs constitute the three-term contingency. You will hear the term contingencies of reinforcement to stand for these relations, although some contingencies involve punishment. But punishment, if it is effective in reducing the possibility of the punished behavior to be repeated, is effective through the process of negative reinforcement. In simple terms when some form of behavior is punished it is less likely to be repeated because it is replaced by other actions which are negatively reinforced (removing the treat of punishment).

We have to be cautious though because since all patterns of behavior are being reinforced in some way or another if the reinforcement of the punished behavior is stronger than the negative reinforcement of removing the treat of punishment then punishment will not be effective.

Stimulus generalization: Why we act similarly in similar situations

Generalization is the name for the spread of effect from one antecedent situation to others that share similar properties. If when standing in a bakery, you are told that a particular good is called “cake” you can correctly identify other pieces of cake on the same shelf without further training. Most of the times you can recognize cakes that are bigger or smaller or made in a different shape. Also you will probably be able to recognize cakes in other shops as well. The closer the physical resemblance, the more likely generalization will occur. Generalization goes on all the time because no two stimuli are ever identical. Even if two stimuli look identical, they differ at least as far as the setting is concerned or even the time that they are presented.

Stimulus discrimination: Why we act differently in different situations

Responding differently to different properties of objects or events is called discrimination. Along with generalization, discriminative stimulus control is always occurring. Infants who say “daddy” when any man is in a room (generalization) soon say “daddy” at the presence of their dad (discrimination). Discrimination takes place when saying “daddy” receives differential consequences. When daddy is present it is reinforced and when another man is present it is extinct.

Discrimination is difficult! Babies must learn to respond to the properties that identify daddy. These properties change from day to day, like clothing, hairdo, perfume, which room he is in, and so on. If daddy’s looks change drastically, many babies will react as though their daddy is a total stranger and they may start crying. Talking to the

A child wearing a bright pink puffer coat, blue and white striped socks, and blue rubber boots is walking in the rain. The child's hand is visible, holding a dark umbrella. The background is a soft, out-of-focus grey, suggesting a rainy day.

child (thus providing supplementary discriminative stimuli) usually helps the child see that this strange person is actually daddy. Neither generalization nor discrimination explain behavior. They only describe the functional connections between discriminative stimuli, operant behavior and consequences.

Generalized discrimination and concept formation: Why we act effectively in new situations

Traditional Discrimination Training

Any feature of the environment that is correlated with reinforcement of an operant gains control over responding in its presence. Discrimination training is thus a matter of establishing relationships between properties of antecedents and the consequences for responding versus not responding in their presence. Those properties are the defining characteristics that people attend to.

Racial characteristics as differential contexts of reinforcement of behavior

When we see a new person and we are asked to reach a conclusion about his/her character this is a problem solving situation. The feature we are familiar with in our individual history will prevail at first but we might be wrong. If the person has blue eyes and in our history we have met people with blue eyes who were kind and friendly we might come to the conclusion that the person is friendly and kind.

But is it correct? Isn't it better to interact with that person before we trust it? The flip side of the situation is when we see a person with dark complexion for example and in our individual history we have heard that people with dark skin color are unfriendly and we wrongly respond to only one feature of this person. Wouldn't it be better to interact with the person before we reject his/her company so as not to lose the chance to a possibly friendly interaction?

Analyzing complex serial relations between acts, their consequences, and the consequences of subsequent acts: The operant chain

Chaining

Chaining is a procedure used to teach a person to engage in a chain of behaviors that make up a functional skill. Often what seem like simple behaviors at first glance are actually quite complex when viewed more carefully.

Take for example, brushing our teeth. We find our toothbrush and the toothpaste tube. We open the tube, we pour efficient quantity of toothpaste on the brush and we close the tube again. We brush

our teeth, we rinse our mouth and we clean the tooth brush. Having clean teeth at the end of the chain or getting praise for brushing our teeth functions as the reinforcer for engaging in the chain of behaviors.

The entire sequence is known as an *operant chain* - a sequence of discriminative stimuli and responses in which each response becomes the discriminative stimulus for the next response as well as the reinforcing stimulus for the previous response, and the last response is followed by the final reinforcer. The stimulus-response connections are the "links" that hold the chain together.

There are three main types of chaining:

Total Task Presentation

The teacher performs the whole task from start to finish in a single unit and the learner is asked to imitate the task. This is a powerful learning tool for those individuals with good imitation skills. However, many individuals have poor imitation skills and different approaches have to be employed.

Forward Chaining

The task is broken down into a series of steps. The initial step is learned first and then the learner is helped through the remaining steps. Next, the second step is taught and the learner completes the first two steps independently and is helped through the other steps. This goes on until all the steps have been learnt to be performed independently. Imagine a child learning the alphabet. The child learns the first two to five letters and then the next two to five letters, and so on. Eventually all the letters are chained together to make up the entire alphabet.

Backward Chaining

The task is broken down into a series of steps. However, it is the last step that is taught first followed by the next-to-last step, and so on until you reach the first step. Imagine a child being taught to tie his shoelaces. We do most of the tying except the last step which is to pull the two laces into place. Next we do most of the tying except the last knot which the child learns to do independently. Eventually the entire chain of behaviors is learned by moving progressively backwards to the initial step.

Socially interlocking operant chains

In many operant chains there is not any social element which means that every step of the chain is the result of the behavior of the specific individual. For example when we boil spaghetti we pour water into the sauce pan, we turn on the cooker, we place the sauce pan on the cooker, we boil the water, we put the spaghetti in the boiling water and we wait until it is ready and so on. However there are operant chains where the discriminative stimuli and the reinforcing stimuli are provided by other people.

For example, when I enter a bakery the shop assistant says "can I help you" and I say "I would like some bread". I do not say "good morning". If I say "I would like some bread" the assistant will probably say "how much" and so on. So there is a mutual exchange of stimu-

li and this exchange is determined to a great degree by our past experience of similar situations. Depending on the consequence of similar behaviors in the past we tend to respond in certain ways but our behavior is constantly shaped by the responses of the other people.

Racial discrimination as interlocation of operant chains

Racial discrimination (either in the form of action or discourse) is a socially interlocking operant chain. If it is an exchange with people who exhibit racial behavior our reaction to their racial discourse will be positively reinforced if it is agreeable and it will not be reinforced (or it will be punished) if it is disagreeable. So, in a social context where there is mostly racist discourse, we tend to do the same.

Similarly, if we interact with a person of different race and we express our hate the reaction of the other person is expected to be aggressive and our reaction to his/her aggressive reaction is going to be even more aggressive and the problem will escalate. Finally, our "conviction" that people of different race are aggressive will be "confirmed". However, the fact is not that the others are aggressive. We both have engaged in a socially interlocking chain of mutually aggressive exchange. Every link of this chain is a discriminative stimulus for threat and it is negatively reinforced by our effort to remove that treat with attack.

Stimulus discrimination and motivation: Conditional reinforcing potency

Respondent Conditioning

The term learning includes two different processes, respondent conditioning and operant conditioning. Respondent behavior always occurs in response to a specific stimulus as part of a reflex. Reflexes consist of a specific physiological reaction to a precedent stimulus. Some reflexes are inborn and they do not depend on learning. For example, lemon juice elicits salivation. Reflexes are part of the functioning of your nervous system. However, a new stimulus that has no initial effect on a reflex response can be made to elicit that response.

This can happen if a neutral stimulus is presented just before the presentation of a stimulus which already elicits a response. After a number of such pairings the neutral stimulus will elicit the same response without the presence of the stimulus that had already been eliciting the response. Although, we cannot change inherited reflexes we still have to deal with respondents that are learned. In any setting you can find fear, anxiety, hostility, or anger, along with their operant correlates of withdrawal or aggression.

These respondents come about through pairing: a formerly neutral feature of a situation comes to elicit the same emotions produced by the paired punishing or frightening events. Not all emotions are bad, of course. Positive emotions result from pairing as well. Photographs of a person you love often elicit affectionate feelings you usually feel at the presence of the person. All emotions are part of behavior and must be considered along with operant behavior in order to understand why people behave the way they do.

Operant conditioning

Most actions are operant and this means that their causes lie in the interactions of the individual in a changing environment. Patterns of behavior adjust all the time to

the kinds of consequences they produce. Operant conditioning refers to the constant evolution of behavior through the process of selection of operant forms of behaviors by consequences. Only the reinforced forms of behavior will be selected and become part of the person's usual pattern of behavior. Operant conditioning begins even before we are born through the interaction of genetic and environmental factors and never stops throughout our lives.

Why we like what we like: The conditional positive reinforcer

Most of our activities are part of an operant chain. Most of the things we do are not reinforced by the final reinforcing stimulus but they become a discriminative stimulus which will lead to the next steps of a chain which eventually will lead to the final reinforcement.

As a discriminative stimulus which leads to the final reinforcement every link of the chain apart from being a discriminative stimulus for the next step it also becomes a reinforcing stimulus since we have completed one step closer to the final reinforcement. So each link becomes a conditional positive reinforcer. Its conditional reinforcing function derives from the differential reinforcement and extinction of reinforcement of actions when it is present and absent respectively.

For example, if I want to go out with my friends on Friday night I enjoy the call I make to invite them, I enjoy the time I get ready, I enjoy the ride to the place we will meet and final I get the final reinforcement which is the interaction with my friends. So, I do not only like the final interaction but I also tend to like the call, the time I spend to get ready, the ride to the place where we will meet. The reinforcing function of the call, preparation for the meeting and the ride towards the meeting derives from the fact that I will meet my friends when I call, get ready and ride to the venue of the meeting and I will not meet my friends when I do not call, I do not get ready and I do not ride to the place of the meeting.

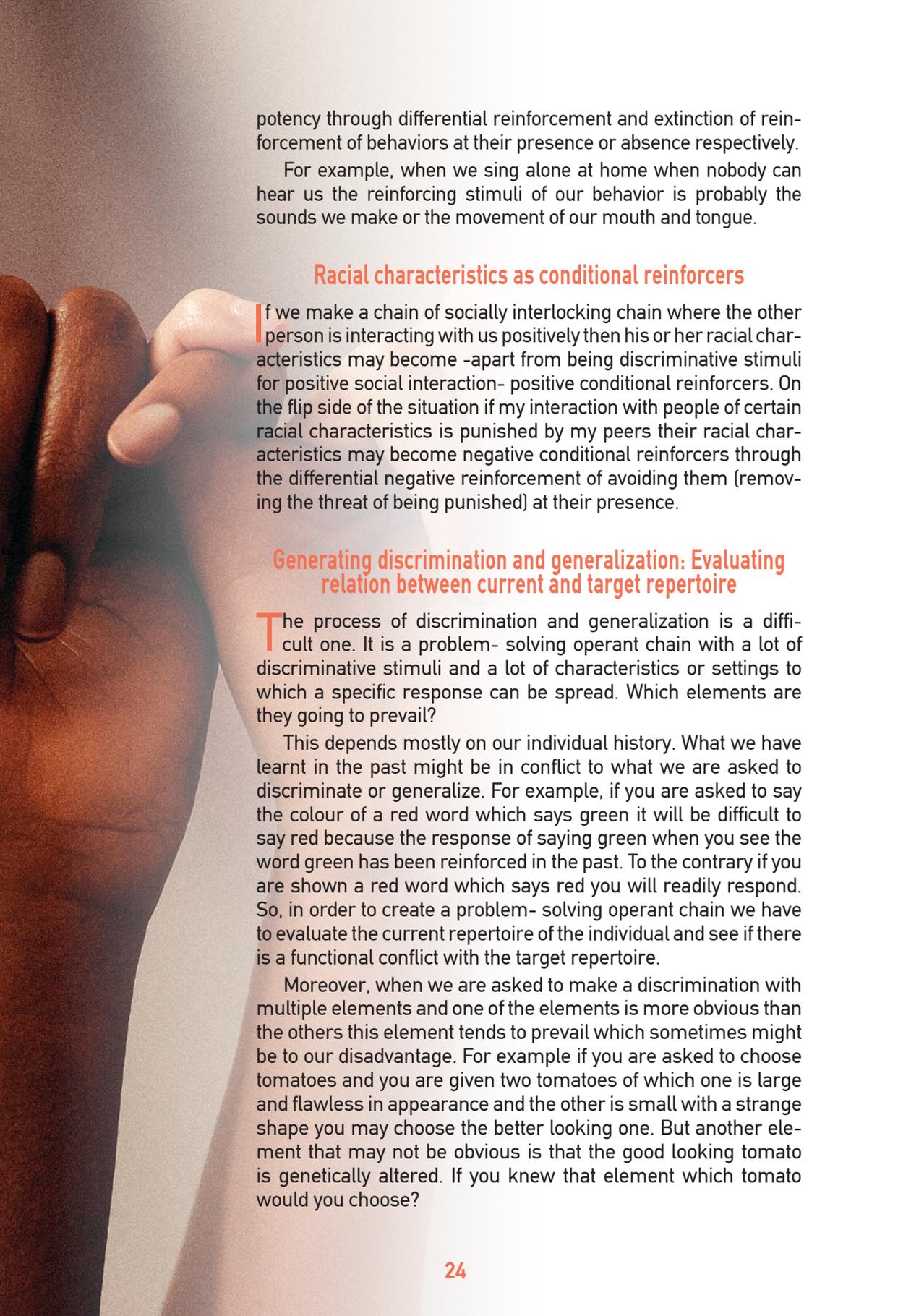
In conclusion everything we like is part of a chain which will finally lead to a final reinforcement always depending on the past consequences of every step of the chain.

Why we dislike what we dislike: The conditional negative reinforcer

In a similar way a great deal of our operant behavior is part of a chain which leads to a final negative reinforcement. The conditional negative reinforcing function of each link of the chain derives from the differential reinforcement and extinction of reinforcement of actions when it is present and absent respectively. The things I dislike remove a final threat as part of an operant chain. If I consider people of different race a threat then the behaviors of not liking them, avoiding them or even attacking them verbally or physically are actually parts of a chain which lead to the lack of interaction with these people and the removal of the threat.

Self-satisfaction: Conditional reinforcing potency of self-produced events

Not all reinforcing stimuli are provided by others. Many times, the bodily consequences of our actions which are produced immediately or automatically when exhibiting the same actions are reinforcing stimuli. They, too, may acquire reinforcing



potency through differential reinforcement and extinction of reinforcement of behaviors at their presence or absence respectively.

For example, when we sing alone at home when nobody can hear us the reinforcing stimuli of our behavior is probably the sounds we make or the movement of our mouth and tongue.

Racial characteristics as conditional reinforcers

If we make a chain of socially interlocking chain where the other person is interacting with us positively then his or her racial characteristics may become –apart from being discriminative stimuli for positive social interaction– positive conditional reinforcers. On the flip side of the situation if my interaction with people of certain racial characteristics is punished by my peers their racial characteristics may become negative conditional reinforcers through the differential negative reinforcement of avoiding them (removing the threat of being punished) at their presence.

Generating discrimination and generalization: Evaluating relation between current and target repertoire

The process of discrimination and generalization is a difficult one. It is a problem- solving operant chain with a lot of discriminative stimuli and a lot of characteristics or settings to which a specific response can be spread. Which elements are they going to prevail?

This depends mostly on our individual history. What we have learnt in the past might be in conflict to what we are asked to discriminate or generalize. For example, if you are asked to say the colour of a red word which says green it will be difficult to say red because the response of saying green when you see the word green has been reinforced in the past. To the contrary if you are shown a red word which says red you will readily respond. So, in order to create a problem- solving operant chain we have to evaluate the current repertoire of the individual and see if there is a functional conflict with the target repertoire.

Moreover, when we are asked to make a discrimination with multiple elements and one of the elements is more obvious than the others this element tends to prevail which sometimes might be to our disadvantage. For example if you are asked to choose tomatoes and you are given two tomatoes of which one is large and flawless in appearance and the other is small with a strange shape you may choose the better looking one. But another element that may not be obvious is that the good looking tomato is genetically altered. If you knew that element which tomato would you choose?

Generating discrimination and generalization: Selecting discriminative and reinforcing stimuli

So, how do we make the right choices and how do we solve these problems? If we want to solve problems and avoid making mistakes we must test our perceptions with precursor actions and trials. You cannot judge people only by their appearance because such discrimination and generalization might be to our disadvantage. If nothing else we miss the joy of the interaction with interesting people who can enrich our life. We have to take precursor action which is the interaction with them.

Generating discrimination and generalization: Using prompts

Prompts

Prompts can be viewed as aides to learning a new behavior. There are many different kinds of prompts that offer physical, visual, or auditory guidance. A prompt can be anything that helps establish a new behavior or the “beginnings” of the new desired behavior. The best way to use a prompt is to apply it at the same time or slightly after the initial stimulus, the instruction.

Physical Prompt – is a prompt in which the teacher physically guides the learner towards the appropriate response. For example, you may put your hand over the child’s hand to guide him/her at his/her first efforts to hold a pencil and write.

Gestural Prompt – is a prompt where you use a gesture to show the desired behavior, for example in a multiple choice question you might point to the correct answer.

Verbal Prompt – is a prompt where the teacher uses a sound or word to guide the child towards the right response, for example, you may say the first syllable of the word which is the correct response to a question.

Generating discrimination and generalization: Fading out prompts

While prompts can be very useful when teaching a new or difficult behavior it is important to eliminate the prompt as soon as you can. Otherwise the learner will not learn to demonstrate the desired behaviors independently. The easiest way to do this is by the method of fading.

Fading

Fading refers to the gradual withdrawal of a prompt. It might not be wise to withdraw a prompt at once. If for example you hold a child’s hand to guide him when writing you must gradually loosen your grip until you only touch his hand without guiding it. Then you might keep your hand over his hand for a while and finally withdraw it completely. Then, you have successfully faded out the physical prompt and the child can engage in the behavior of writing independently.

Generating discrimination and generalization: Use of models

Using Physical Similarity for Modeling

From the first days of life, youngsters learn to copy what others do. By school age, most children imitate behaviors. They copy others who obtain the kinds of reactions they would like from others. A person that others imitate is called a model. When you demonstrate a procedure in class, you are modeling behavior for your students to imitate. You are one model. Peers can be used as models, too.

Video Modeling of a Student's Own Behavior

To help improve performance, videos can be taken of a student's own behavior.

However in order to give a good model of one's own behavior, the video can be edited. The idea behind editing a video is to show a student acting almost perfectly. You do not show the person his/her mistakes because you want him/her to copy his/her perfect behavior. You do not want him/her to imitate his/her mistakes. He/she sees himself/herself behaving perfectly! Sometimes the result of this procedure is a dramatic shift towards appropriate behavior.

Peers as Models

Peers have also been used as models. A student behaving appropriately receives praise. Other students are expected to copy the reinforced behavior. Then you must immediately praise the behavior of the imitating students. Human beings are extremely sensitive to the relation between behavior and its consequences—even when observing it in others.

Generating discrimination and generalization: Use of rules and instructions

Rules and instructions are contingency specifying discriminative stimuli. They verbally describe the form of behavior which may eventually lead to reinforcement. So, if past actions of following instructions and rules have been reinforced then the correspondence between the instructions and rules and the stimuli produced by the behavior of the individual will become a reinforcing stimulus apart from being a discriminative stimulus as part of a chain which will lead to a final known reinforcement.

Self-constructed discriminative stimuli

The term self-constructed discriminative stimulus refers to the problem solving behavior as opposed to trial and error. In a situation where you are asked to solve a problem but you are not given any discriminative stimulus in order to be able to follow an operant chain of behavior towards the solution you either take random steps hoping that you will reach the final reinforcement (the solution to the problem) or you construct discriminative stimulus yourself.

For example, if you are given 50 boxes and you are told to find the one which contains 50 euros if you follow the trial and error method you will start opening boxes randomly until you open the one which contains the money. The problem solution method would be to open one box and if there is no money in to mark it so as not to open it again. Then open another box and mark it too if there is no money in and so on. This way you construct

discriminative stimuli yourself in order to avoid opening the same boxes again and again.

Another example is when you are asked to remember the number 8484443. You either try to just remember it or you construct a discriminative stimulus which will help you remember it when you do not see it. An effective discriminative stimulus will be to describe the number as follows: 8 then half 8 then 8 then half eight 3 times.

Self-constructed discriminative stimuli in problem solving: How stimuli produced by failure evoke or induce effective action

When we try to solve a problem (operant chain of behavior) and we self-construct discriminative stimuli, many times these discriminative stimuli guide us towards the final reinforcement (the solution to the problem) through the method of exclusion. As in the example with the boxes mentioned above the discriminative stimuli (mark on the boxes which do not contain money) show which is not the solution to the problem. This way our failures lead us to the correct box. So it is an operant chain of failures which lead us to the final reinforcement. In other words, each failure is a further approximation to the end of the chain (solution/success) and acquires conditional reinforcing potency as a link of an operant chain.

Discrimination of complex events

When we are asked to discriminate among stimuli with a lot of properties or elements our discrimination is based on a limited number of these elements. For example, if we are to discriminate a friendly person among a number of people how are we going to do it.

Determinants of selective attention and selective inattention

Probably we are going to base our discrimination on our past experiences. We are not going to pay attention to his/her haircut but most of us will pay attention to the presence or absence of a smile on the person's face. Too much attention to the detail will be problematic and no attention to certain characteristics will also be problematic.

Racist attribution as poorly adapted discrimination of complex events

Our perception of the "other" is based on the discrimination of the complex concept of the "other". The problem we are asked to solve is who any other we meet is. Usually, we do not have enough discriminative stimuli to correctly perceive such a complex concept and we rely on what is available. What is usually available is the appearance of the person and more specifically his/her most distinct characteristics.

So, instead of checking our perception with supplementary discriminative stimuli we readily jump to a conclusion based on the element that prevails which might not be the most important element. In other words, we base our discrimination of the concept of another person on the color of his/her skin, the color of the eyes, the accent when he/she speaks and so on.

In order to make a more informed discrimination though we should ask for supplementary discriminative stimuli which can only be provided through our interaction with the person.



Sources of racial discrimination: Differential positive reinforcement

Another source of racial discrimination comes from differential positive reinforcement. If members of your society express a negative opinion about people of other races and you agree then your agreement is reinforced with their friendship and companionship.

On the other hand if you disagree your behavior will either be punished or put on extinction. So, according to the principle of reinforcement you will tend to express a negative opinion about people of different race since this is the form of behavior which has been differentially reinforced.

Sources of racial discrimination: Differential negative reinforcement

Closely related to the above argument is the explanation of racial discrimination which is based on the principle of negative reinforcement. There are two possible ways that racial discrimination might be formed based on differential negative reinforcement.

If you interact with people who make negative comments about people of different race your behavior will be punished. They might say that you are silly or ignorant and they might avoid interacting with you the next time. In order to remove the threat (negative reinforcement) of being punished you tend to agree with the racial discourse and actions.

Moreover, it is not always the removal of the threat from others which form racial discrimination. It is also the removal of a threat coming from your own feeling of inferiority. If others are worse than you, then you become better than somebody. You might not be perfect but they are others who are worse than you. It is a great relief not to be the worst of all! So, the removal of the threat elicits the respondent behavior of relief (feeling). Then the racial action or discourse is paired with the relief (conditional respondent behavior) and finally the racial action and discourse elicits relief without the presence of a threat because of this pairing. But whatever action elicits relief is positively reinforced. So the frequency of racial activity is expected to increase.

Sources of racial discrimination: Generalized imitation

It has already been mentioned we tend to copy the behavior which has positive consequences for other people. If you belong to a group where negative comments or aggressive actions against people of different race are mutually reinforced by each other you will probably tend to copy this form of behavior.

Sources of racial discrimination: Generalized conformity to rules

Another source of racial discrimination may be a generalized conformity to the rules of your community. If most of the people in the group of people you interact with demonstrate racial behavior then if in your past conformity to the rules has been reinforced you will probably conform to the rules of your community which attribute to the people of different races characteristics such as inferiority or aggressiveness or laziness or any other negative feature.

Sources of racial discrimination: Self-constructed stimuli

Let's go back to the operant chain of problem solving and the self-produced stimuli. As it has already been mentioned, when there is a problem to be solved but no discriminative stimuli are available to guide you along the operant chain of behavior towards the solution you either take random steps hoping that you will reach the final reinforcement (the solution to the problem) or you construct discriminative stimuli yourself. Since we are usually asked to know the solution to the problems because in our past history admitting ignorance was punished we tend to follow the second process which is the self-construction of stimuli. In case of racial discrimination if we are asked, for example, to find a solution to the unemployment and we do not know the solution we will resort to our past experiences to construct precursor discriminative stimuli. So, if in our past we have heard many times that immigrants take our jobs we tend resort to this information without any attempt to apply the process of trial and error. As a consequence we conclude that the cause of unemployment is the immigration and if we eliminate it we will eliminate unemployment as well.

Sources of racial discrimination:

Adventitious reinforcement produced by contemporaneous action

Sometimes certain thing or events take place immediately after the emission of a specific behavior although they have not been produced by this behavior. For example, I wear a blue shirt I take an exam and I pass. Although the fact that I wore the blue shirt did not make the consequence of passing the exam available, it may adventitiously become a discriminative stimulus for the consequence of passing an exam.

So, we might incidentally end up with a three-term contingency which is as follows: I wear a blue shirt (discriminative stimulus), I take an exam (behavior), I pass (consequence). Of course, the blue shirt did not cause my success (everybody would guess that my studying has caused this success) but just because it happened at the same time with my studying (and is probably more distinct than the studying) it might become a strong discriminative stimulus for the success.

The same process might become the source of racial discrimination.

I interact with people of my own race many times and I have not been deceived or robbed by them. So, a three-term contingency might be formed which is as follows: The presence of people of my own race (discriminative stimulus), interaction (behavior), not deceived or robbed (negative reinforcement). Since we have more chances to meet

with people of our own race then this negative adventitious reinforcement may easily become the case.

In other words, I remove the threat of deception or robbery by interacting with people of my own race. Eventually this negative reinforcing stimulus elicits relief and relief becomes positive reinforcement for the action that has produced it (interacting with people of my own race and avoiding people of different race). So, this avoidance of people of different race by itself becomes a positive reinforcing stimulus (a pleasure).

Racial aggression as failed problem solving

From the above we may conclude that racial discrimination most of the times is a failure to solve a problem. This might take the form of poorly adapted discrimination of complex events, differential positive reinforcement, differential negative reinforcement, generalized imitation, generalized conformity to rules, self-constructed stimuli or adventitious reinforcement produced by contemporaneous action. All the above, are mainly related to operant behavior and more specifically to operant chains. Below we will discuss respondent behavior in relation to racial discrimination.

Relation between aggression and punishment. How punishment works, and why it should be avoided, especially as a consequence of aggression

Racial discrimination and discourse are both one form of aggressive behavior which functionally equals any form of aggressive behavior which has the consequence of avoiding the interaction with people of different race. Punishment which is the presentation of an aversive stimulus or the withdrawal of a positive reinforcer elicits the respondent behavior of fear. Events preceding or happening at the same time with the punishment are paired with the punishing event and they elicit fear as well. These events (conditional eliciting stimuli) which include kinaesthetic and sensory events of our body becomes a discriminative stimulus for any action which will remove fear. Actions removing fear are usually fleeing or attacking.

The removal of fear elicits relief. Any event which precedes or happens at the same time with the removal of fear become an eliciting stimulus for relief and at the same time a positive reinforcing stimulus. So, the bodily events we experience (kinaesthetic or sensory) when we flee or attack acquire a positive reinforcing potency.

In other words, our body "enjoys" fleeing or attacking without the presence of punishment. In this way aggressive behavior has reinforcing consequences and its frequency increases. Needless to say that if punishment is actually one of the possible causes of aggression then by punishing aggression we only cause more aggression.

Evocation and positive reinforcement of incompatible behavior as an effective alternative to punishment and negative reinforcement

A question that might surface is what we can do about racist behavior if we do not punish it. As we have already mentioned in order to decrease the frequency of a form of behavior we can increase the frequency of a form of incompatible behavior.

Due to the economy of behavior we cannot do two incompatible things at the same time (we cannot stand and sit at the same time). So by increasing the frequency of a desirable incompatible behavior automatically the frequency of the undesired behavior will decrease without requiring any specific intervention.

With reference to racist behavior one form of incompatible behavior is the positive interaction with the people of different race. In other words, we can reinforce this interaction and automatically the racist behavior will decrease (you cannot be racist and interact positively with people of different race at the same time).

Aggression and emotion: Aggressive acts are determined by their past consequences in similar contexts, not by feelings or emotions. What we call emotions or feelings are reflexive (respondent) behaviors, principally arousal of the autonomic nervous system, often by conditional eliciting stimuli. Respondent behavior is unaffected by its consequences, but stimuli produced by it might evoke aggressive behavior

Aggressive acts are not caused by the feeling of "racism". Both behaviors, feelings (respondent behavior) and aggressive acts (operant behavior) are determined by our past experiences. The feelings of racism are conditional eliciting stimuli which have become positively reinforcing stimuli due to the fearful events that we have experienced in our past and the aggressive acts are the result of failed problem solving due to the wrong discriminative stimuli we have utilized along the operant chain of solving the problem which in turn have been determined by our past experiences.

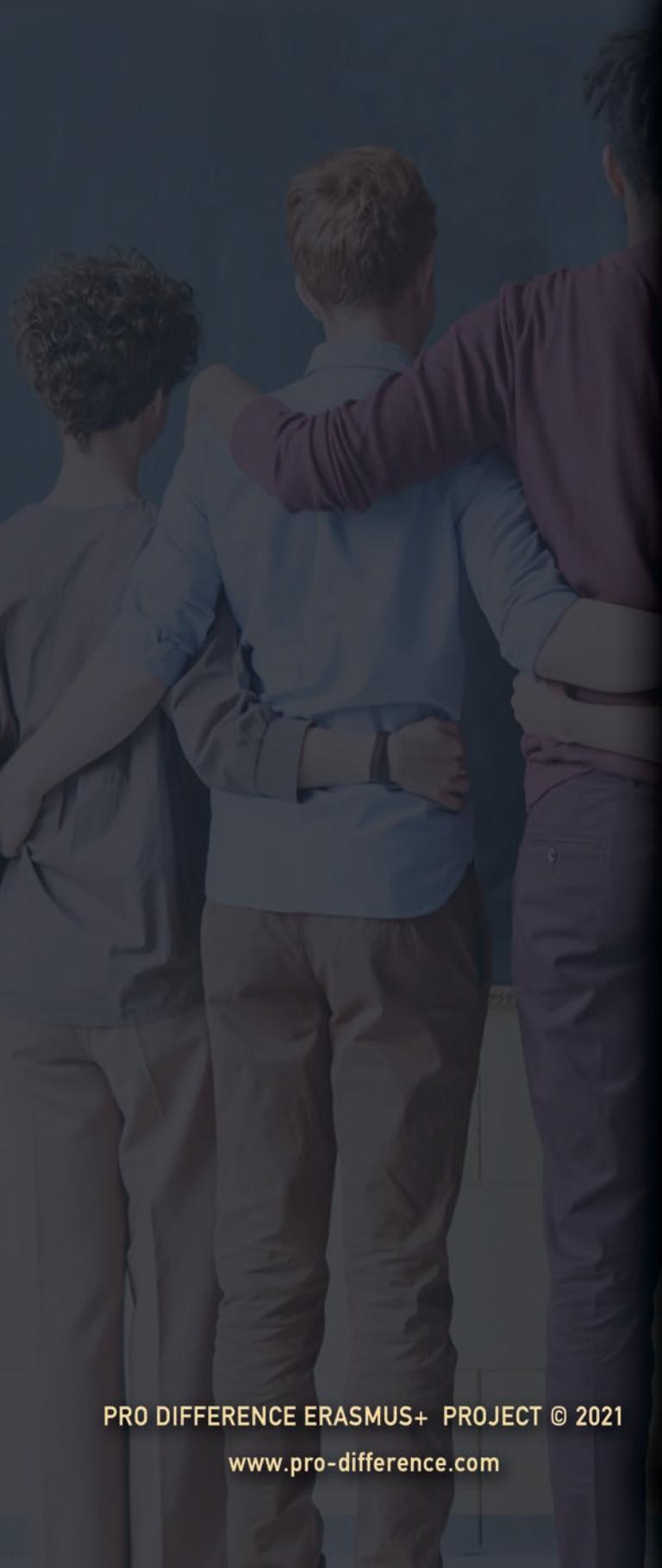




Make the
world a
better
place.

PRO DIFFERENCE ERASMUS PROJECT © 2021

www.pro-difference.com



PRO DIFFERENCE ERASMUS+ PROJECT © 2021

www.pro-difference.com