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Erroneous Perceptions of Chinese Baccarat Players: Evidence from Guidebooks

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Abstract Baccarat, as the most popular gambling game, is also the one to which the majority of pathological gamblers who sought help are addicted in Macau. This paper documents the cognitive distortions of Chinese Baccarat gamblers from guidebooks written by five experienced Chinese gamblers. The analyses of their descriptions of Baccarat and their observations about other Chinese gamblers show that the objective of the vast majority of Chinese Baccarat players is to make quick money rather than view Baccarat as a form of entertainment. Further, cognitive distortions—such as the gambler's fallacy, illusion of control, illusory correlation, interpretive bias, and availability of others' wins—are pervasive. Some erroneous perceptions have Baccarat-specific representations, such as following trends, money management tricks, and following winners. These findings may contribute to prevention/awareness education and counseling services for pathological gamblers.

Keywords: Macau, Gambling, Cognitive Distortions, Gambling Behavior

Introduction

Gambling is a cross-cultural phenomenon, but different people seem to have different preferences regarding types of gambling; in addition, the impact of one type of gambling may be different across ethnicities (Abbott et al. 2013). There is a general view that electronic gaming, the most addictive form of gambling, contributes more to problem gambling than does any other gambling activity. The favorite game for most players and problem gamblers in Western countries is playing slot machines (Dowling et al. 2005). However, Baccarat (the dominant game in Macau) contributed 90.8% of gross gaming revenue, while revenues from slot machines (the second most popular gambling activity)

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contributed only 4.1% in 2014 (Gaming Inspection and Coordination Bureau 2015). Baccarat is also the game to which the majority of problem gamblers who seek help are addicted in Macau. Among the 571 problem gamblers who sought help from Macau's Resilience Centre between 2006 and 2013, 463 (89.4%) reported that Baccarat is one of their favorite games, while 66 (12.7%) reported that playing slot machines is one of their favorite games (Resilience Centre 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014).

In decision-making, people necessarily use heuristics, or cognitive shortcuts, which endeavor both to achieve the desired outcome most of the time, and to do so quickly so as to meet the demands of real life. Biases—such as representativeness, availability, and anchoring and adjustment—between the optimal solution and the solution achieved via heuristics are both acceptable and unavoidable (Tversky and Kahneman 1974). For most gamblers, a natural impulse and the way to be entertained is taking advantage of heuristics in wagering decisions (Delfabbro et al. 2006; Ladouceur et al. 1988; Sévigny and Ladouceur 2003). However, gambling provides a form of entertainment, and the house advantages on different games are expected returns to the casinos. No wagering strategies based on heuristics change the fact that the gamblers will lose in the long-run. Cognitive distortions, that is, erroneous perceptions, maintain gambling despite negative outcomes (Delfabbro 2004; Jacobsen et al. 2007).

Erroneous perceptions of slot machine gamblers have been extensively studied (Carroll and Huxley 1994; Choliz 2010; Delfabbro and Winefeld 2000; Dowling et al. 2005; Walker 1992). The studies' findings have been used to develop prevention, awareness education, and counseling services for pathological gamblers (Gaboury and Ladouceur 1993; Ladouceur et al. 2004; Lavoie and Ladouceur 2004; Messerlian et al. 2005). For example, the outcomes of slot machine gambling are determined totally by a random number generator; many erroneous perceptions of slot machines gamblers are due to misunderstanding the nature of *randomness*. The notion of randomness and the working principles of slot machines have been incorporated in cutting-edge prevention messages and counseling services for pathological gamblers.

Existing studies on slot machine gamblers may provide a suitable reference point for helping Baccarat gamblers. On the other hand, the course of disordered gambling can vary by type of gambling (Hodgins and el-Guebaly 2004; Slutske 2006); therefore, it is useful to explore the specific features of Baccarat problem gamblers. Currently, there is no rigorous study on Baccarat and problem gambling. Lam (2007) reported his personal nonparticipatory observation on Chinese Baccarat players in a Macau casino. Those Baccarat players exhibited a high illusion of control in gambling; for example, by revealing their cards in a ritual procedure in the hope of manipulating the cards in their favor and trying to follow players who are enjoying a big winning streak. Chan and Ohtsuka (2013) documented the clinical and social construction of 11 Paichais (which means literally "to grab money from others") who are pathological gamblers, gambling every day for prolonged periods in Macau casinos. Baccarat appeared to be their favorite game. These pathological gamblers tried to predict card dealing by working out patterns of the draw card outcomes during a gambling session; this can be interpreted as the gambler's fallacy. Gamblers' erroneous perceptions were not the focus of research by Chan and Ohtsuka (2013), who suggested a detailed examination of the Paichais' cognitive structure and belief systems.

Baccarat is not a mathematically pure chance game, although no optimal strategy for successful gambling has been found, as occurs in Blackjack (Grosjean 2007). It is difficult for gambling counselors to challenge pathological gamblers regarding Baccarat-specific cognitive errors. It may be possible to provide better help to these problem gamblers and

design better prevention programs if we are better able to understand the Baccarat-related erroneous perceptions.

Brief Summary of Cognitive Distortions

Different classifications of erroneous perceptions have been proposed over the years (Fortune and Goodie 2012; Toneatto 1999), although there has been little agreement on how to classify these cognitive distortions. Toneatto (1999) distinguished illusory correlation from talismanic, behavioral, and cognitive superstitions (combined as superstitious beliefs). Fortune and Goodie (2012) regard talismanic, behavioral, and cognitive superstitions as examples of illusory correlation. Whether some of these are regarded as a cognitive distortion is also an issue. For example, Toneatto (1999) listed chasing, anthropomorphism, learning from losses, hindsight bias, and temporal telescoping as cognitive distortions, but Fortune and Goodie (2012) did not regard these as separate types of cognitive distortions. Regardless of agreement or disagreement on the validity and the usefulness of these categories, they remain essentially descriptive: To operationalize Baccarat-related phenomena to inform educational and counseling programs, this paper tries to document five types of cognitive distortion.

Gambler's Fallacy

Gambler's fallacy derives from an expectation that a sequence of short-run events will be representative of long-run distributions (Tversky and Kahneman 1971). When events generated by a random process have deviated from the population average in the short-run, individuals may erroneously believe that the opposite deviation will become more likely. For example, the chance of a Banker bet and a Player bet win is similar in Baccarat; more Player bet wins would be expected if more Banker bets were won previously. We reach a similar explanation by using the Gestalt principle of "grouping": Any grouping that is subjectively salient to an individual is deemed likely, to the extent that it reflects the long-run characteristics of the random process (Roney and Trick 2003). For example, in a given shoe—if some pattern such as P (Player bet wins)-B (Banker bet wins)-P-B—appears, the gambler will expect Player bet to win in the next hand.

Illusion of Control

The illusion of control is the tendency for individuals to overestimate their ability or knowledge to control events that are not warranted by objective reality (Langer 1975). In the situation of gambling, gamblers tend to expect a personal success probability that is inappropriately higher than warranted by the objective probability. This is also referred to as "overconfidence" (Goodie 2005) or "magnification of gambling skill" (Toneatto 1999).

Illusory Correlations

Illusory correlations are where causal connections are assumed in instances where events are simply occurring in a correlated fashion (Gaboury and Ladouceur 1989). For example, many pathological gamblers believe that personal luck can affect chance outcomes. Essentially, gamblers create an unjustified association between two unrelated variables; as a result, behavioral, cognitive, or talismanic superstitions are prevalent among gamblers.

Availability of Others' Wins

Griffiths (1994) proposed that when individuals see and hear fellow gamblers winning at nearby slot machines, it allows them to believe that winning is a frequent occurrence, thereby reinforcing the belief that they will win if they continue to play.

Interpretive Bias

Interpretive bias allows gamblers to reframe their memories regarding gambling experiences in a way that focuses on positive experiences (wins) and disregards negative experiences (losses). This facilitates the rationalization of a decision to maintain gambling behavior. In the literature, this is referred to as inherent memory bias, selective memory, attributional biases, or interpretive control (Toneatto et al. 1997).

Brief Introduction to Baccarat

In Macau casinos, Baccarat is subject to the statutory regulations approved by the Secretary for Economy and Finance (Baccarat Statutory Regulation 2015). There are three variations of Baccarat in Macau: conventional Baccarat, Super-6 Baccarat, and Dragon-7 Baccarat (also known as EZ Baccarat). The common rules of all versions of Baccarat are that players aim to predict which of two hands of cards (Player and Banker) is the winning hand or a tie, in the case of neither hand being a winning hand. After bets are made, two cards are dealt to each, first to the Player and then to the Banker. A total of 8 or 9 on the first two cards is called a "natural." Otherwise, the hand is over and bets are resolved. If neither hand achieves a winning score, a fixed set of rules is applied to determine if either side takes a third card. At this point, the hand with the highest count wins. In Baccarat, cards ace through nine are worth their face value, and cards 10, jack, queen, and king are each worth zero points. In totaling the score, where the hand value is greater than nine, the first digit is discounted (for example, five plus eight is worth 3, not 13). Winning bets on Player or Banker are paid at even money, and winning bets on a Tie are paid 8 to 1. Winning bets on Banker or Player Pair pay 11 to 1 and on Dragon-7, 40 to 1.

In conventional Baccarat, a 5% commission is paid to the casino for every winning bet on Banker. In Super 6 Baccarat, no commission is paid directly to the casino; all winning bets are paid in full except when the Banker wins with a score of 6, the payout on the Banker's winning bet will be 50% only. Instead of taking direct commission, in Dragon-7 Baccarat, there will be no payout to patrons making winning bets on Banker when the Banker wins with a three-card total of 7. Side bet options are available in all versions of Baccarat.

Generally, packs of preshuffled eight-deck-card (one deck has 52 cards or 416 cards in one pack), which are put in a shoe are used in Macau casinos. These cards are not reshuffled and not reused in the process of the game.[1] Within one pack, different runs are interrelated rather than independent. Card-counting strategy based on probability estimation and some specific game rules may be a reasonable attempt to beat the house (Thorp and Walden 1966). Thorp shows that card counting may help reduce the house advantage (albeit on a very small scale), but "advantages in Baccarat are very small, they are very rare, and the few

[1] The exception is Dragon-7 Baccarat, where the eight-deck cards are continuously reshuffled and each run is reused by putting them back in an electronic shoe. Continuous reshuffle eliminates the potential advantage of the card-counting strategy on a Dragon-7 side bet (Jacobson 2011).

that occur are nearly always in the last 5 to 20 cards in the pack" (1985 p. 38). However, Macau casinos will use a new pack of eight-deck-card when there are about 40 to 50 unused cards in the current pack. As a result, for all practical purposes, Baccarat is a game of pure chance (Bjerg 2010; Hannum and Cabot 2001; Shackleford 2008).

For the conventional eight-deck Baccarat, the house advantage is 1.06% on the Banker bet, 1.24% on the Player bet, 14.36% on the Tie, 10.36% on the Banker or Player Pair, and 7.61% on Dragon-7 (Shackleford 2011). Super 6 or Dragon-7 alters the house advantage only on the Banker bet (1.46% and 1.02%, respectively). The Banker bet and the Player bet in Baccarat are among casino games with the lowest house advantage, and the outcomes of any bet have volatility. As a result, it is quite normal for a frequent gambler to win sometimes, which may make him or her mistakenly believe that his or her "strategy" works—even though there are no strategies involved at all.

Baccarat has a minimum bet requirement. Currently, the minimum bet in Macau casinos for Banker/Player bets is often between MOP500 and MOP3,000[2] or even higher, depending on time/casino/gaming area. A higher mimimum bet is often required in VIP gaming areas in luxury casinos on weekend evenings or holidays. Small or losing gamblers who cannot afford to place the minimum bet but wish to keep gambling may bet together; for example, five gamblers making a combined bet of MOP500, each wagering MOP100. Alternatively, such a gambler may bet on another gambler's bet. For example, if the gambler would like to bet on Banker, he or she may put his or her bet on the bet of another gambler who wagered on Banker. Such a practice is often acceptable in many casinos in Macau. Many gamblers also accept others betting on his or her bet, although not all gamblers will do so. Such a practice is described as a "riding" bet.

Methodology

Analytic induction is the main approach used of this paper (Patton 2002). It begins with deduced propositions that are a procedure for verifying propositions based on qualitative data. Following the literature on erroneous perceptions of gamblers (gaming machine gamblers in particular), it is suggested that Chinese Baccarat gamblers have erroneous perceptions. The raw data used in this paper are Baccarat guidebooks written by Chinese Baccarat gamblers. I have used the literature-derived classification of gambling erroneous perceptions throughout the inquiry while remaining open to the discovery of new types of erroneous perceptions not accounted for in the original formulations.

By shopping in different bookstores and searching libraries in Macau, I found 10 guidebooks on Baccarat in Chinese (Chen 2004, 2005a, 2005b, 2010a, 2010b; Dai 2010; Xu 2006, 2007; Yip 2006; Zeong n.d.). One of these books was published in Hong Kong (Yip 2006), one is believed to be published in Macau (Zeong n.d.), and the other eight books were published in Taiwan. Five of the books were written by one author (Bruce Chen), and two of the books were written by another author (Bozhi Xu); three authors have written one book each. Eight of the 10 books are exclusively about Baccarat, and the other two cover more than one game, with one chapter focusing on Baccarat.

Each of the five authors is an experienced Baccarat player. Two of the five (Bozhi Xu and Zilang Dai, who claimed that they had been blacklisted by many casinos worldwide) are

[2] USD$1.00 is about MOP$8. The minimum bets range between USD$62 and USD$375, which is quite high compared to casinos in other jurisdictions such as Las Vegas.

effectively professional gamblers, while the other three authors claim to have extensive experience of Baccarat gambling. For example, Leong Zeong said he had accumulated thousands of "road recording forms" about his gambling life.

I analyzed each of the 10 books to locate erroneous statements and classify these statements into different types of cognitive distortions, as discussed above. The contents of different books written by the same authors are very similar, while the presenting formats look different, which seems a marketing strategy rather than presenting significantly new material. Where one author has written more than one book, only one of the books is documented here. The documentation is structured by the authors of these books.

Data Analysis

Leong Zeong

Introduction to and Winning Tips for Baccarat was written by Leong Zeong (n.d.), an experienced gambler in Macau. While no information regarding the book's publication date is available, the present analysis is based on the fourth edtion. The title of the book seems to suggest that the objective of Baccarat gambling is to make money.

Zeong proposed a number of gambling strategies, many of which are misleading, representing one or other type of cognitive distortions. All five types of cognitive distortions (discussed earlier) are found in this book. One of the gambling strategies is "Six Square Magic Tactic": Regard 36 games as one session and record the outcomes of these 36 games in a 6×6 square diagram, ignoring tied games. Zeong (n.d.) assumed that for every six games in any one row, column or diagonal, half "should" be winning on Banker bet and another half "should" be winning on Player bet. He suggested that "if more winning bets occurred are Banker bet, it is better to keep increasing bet on Player until win" (p. 9). The chance of Banker and Player bets is similar in the long run but not necessarily so in the short run. This is an inventive example of the gambler's fallacy.

Zeong (n.d.) provides examples of overconfidence (illusion of control): "It is difficult to win but it isn't impossible. Shouldn't it be easier to win on Baccarat than the human spaceflight project which has been successful?" (p. 30) and "it is absolutely worthwhile to learn and to practice Baccarat betting tactics" (p. 41) . . . "it cannot be regarded as winning even if you have increased [your gambling capital] from MOP100,000 to MOP180,000 on Baccarat, the bottomline to win is to double your initial gambling budget" (p. 7).

Zeong's book provides examples of illusory correlations: "As it is more common to lose in a tomb-like casino, you may wear a cross if you are a Christian or beads with Buddha if you are a Buddhist, to counteract such effects" (p. 95) . . . "as we believe that gambling is the product of devils and devils must be active at night and inactive in the daytime, you will win if you stick to gambling during the daytime" (p. 95).

Gamblers around a Baccarat table place bets on the same sets of dealt cards, which we may call "community cards"; when a gambler wins, this not only encourages continuation of gambling but is also commonly used by other gamblers as a signal to gamble. Zeong proposed the following-the-winner tactic: "There are always winning gamblers and losing gamblers . . . the chance of win will be high if you follow a winning gambler in a specified duration" (pp. 85–86). The problem is that winning or losing on Baccarat is by chance; a

win in previous runs has no impact on outcomes of later runs. Using such information to guide any individual's gambling strategy is misleading.

Interpretative bias is also evidenced in Zeong's book: "I have realized that I was very stupid and had made so many mistakes [in past gambling]. They were especially obvious when I was in poor condition. It was these mistakes that led to my loss" (p. 78).

Zeong also observed that the vast majority of gamblers carefully keep track of the shoe history by recording the outcomes of each run by using a casino-designed form referred to as a "road recording form." Gamblers try to predict the outcome of the next run by using different methods to define patterns. Five methods are regarded as "standard roads": the Bead Plate Road, the Big Road, the Big Eye Boy, the Small Road, and the Cockroach Road (Scott 2011, July 1). All casinos in Macau have introduced electronic screens to display the shoe history and these standard "roads." Clearly, these attempts at following trends (roads) are to find "predictable" patterns from events generated by a random process, which is an exact manifestation of the gambler's fallacy in Baccarat. Zeong correctly concluded that "such following trend strategies are doomed to fail" (p. 3).

Wai-Tong Yip

The gambling strategies proposed by Yip (2006) also involve many cognitive distortions. The example of the gambler's fallacy is, "Do not miss the great opportunities if the trend of outcomes of games have shown good patterns such as P [which means Player bet wins], BPB, PPBBPPBB, BPPBPP, etc." (p. 52). These are nothing more than wishful patterns characteristic of the Big Road. Yip claims that the main gambling strategy proposed in his book is to "gamble steadily to win" (p. 36). He argues that, from a pragamatic perspective, the reasonable return on Baccarat gambling should be 200% (p. 35). Such ignorance of the entertainment consumption nature of Baccarat and irrational expectation unwarranted by objective reality is an illusion of control. Further, by setting a target of a 200% return on Baccarat gambling (in a single casino visit), he seems to claim the object of Baccarat gambling is making money.

Yip observed that riding betting is quite common, although gamblers' dislike of others placing riding bets on their own wagers may be explained by the perception that riding bet gamblers are often experiencing bad luck themselves, thereby bringing bad luck to the gamblers on whose bet they placed a riding bet: "Such bets are most likely to lose" (p. 65). A riding bet is believed to bring bad luck, which is a cognitive superstition and a manifestation of illusory correlations.

Yip also supports the tactic of following the winner. He believes that there are always three types of gamblers in casinos: the unlucky, the ordinary, and the lucky. "When you find one lucky player who has been winning, follow him as a guiding star to play at increased wagers in the first three runs. Restart from initial betting size again if successful and keep following the winner until the guiding star makes a mistake" (p. 46).

Yip believes that the luck of any individual changes over his or her life and over one day and one gambling episode. "The winning streak comes with the good luck and the losing streak comes with the back luck" (p. 38). He proposes that "you need to think it over and to revise your gaming strategy after a gaming episode, such as, when winning streak came, did you miss the profitable opportunity because you were scared to lose and did not increase your bet size?" (p. 73). These are manifestations of interpretive bias.

Yip observed and criticized many cognitive distortions of other gamblers. Besides following trend tactics criticized by Zeong, he summarizes some other misleading tactics

commonly used by other gamblers. Examples are: (a) bet on a Pair if a Tie bet won in the previous run, (b) bet on the "8" side if "9" won over "8" in the previous run, (c) do not bet on Player if the Tie bet won on "8" or "9" in the previous run, and (d) wait for a new shoe when it is difficult to find a good pattern in an ending shoe (p. 19). These are also manifestations of the gambler's fallacy. Yip reported that many gamblers stick to supersitious gambling-related habits such as: (a) do not take a bath before gambling, (b) do not meet any monk before gambling, (c) do not bet when the dealer is replaced by another one, (d) do not be touched by others on your shoulder during gambling, and (e) enter the casino through the same gate as the last time you won. These are examples of illusory correlation (p. 56).

Bruce Chen

Of the five books written by Bruce Chen, one was published in 2004, two in 2005, and the other two in 2010. *Winner Take(s) It All—Roadmap to Baccarat Fortune* (Chen 2010b) is the most recent and updated text. It is also an essentially concise and revised edition, incorporating the four preceding books. As a result, this book was chosen for analysis here. First of all, the title itself seems to hint that the objective of Baccarat gambling is to make a fortune.

Chen objectively described the Baccarat rules and explained the house edge and its implication for gamblers in the long run. He observed and criticized many cognitive distortions of other gamblers, such as following trend strategies (pp. 61–69, 74), following other gamblers (p. 76), and betting systems[3] (pp. 79–80). The following trend is a typical gambler's fallacy, as betting systems are an illusion of control, and following other gamblers is an illusory correlation in the way that the good luck of winners or bad luck of losers are believed to last.

Believing that "smart money allocation and flexible chips deployment is the must-win skill in Baccarat" (p. 69), Chen (2010b) proposed several gambling approaches, such as "anti-martingale," "five-episode-eight-scale," "grade-up," and "cocktail." These approaches recommend a gambler should place a larger bet if he or she has won in the previous runs and place a smaller bet if he or she has lost in the previous runs, according to suggested incremental scales which differentiate the approaches. Chen proposed different predetermined incremental scales. Taking the five-episode-eight-scale as an example, regard five runs of a game as one small espisode and four small espisodes as one session. Bet only on Player or Banker. In each session, start from a small bet, increase the size of the bet in a predetermined incremental scales (e.g., 1, 1, 3, 6, 10) if the previous bet wins. Restart from a small bet when the previous bet lost or one small episode ends. Increase the bet size if the previous episode wins or vice versa (pp. 108–131). These approaches are nothing more than money management tricks. The expected loss is the product of the total amount wagered and the house advantage. It does not make any difference how the total amount bet is broken up

[3] It is also known as the Martingale by which a player doubles his or her bets after a loss until he or she achieves a win. The idea is that by doubling a bet after a loss, the player would always win enough to cover all past losses plus one unit. For example if a gambler starts at $1 and loses three bets in a row, winning on the fourth, the gambler will have lost $1 + $2 + $4 = $7 on the three losing bets and won $8 on the fourth bet. The losses were covered and he or she had a profit of $1. The problem is that it is easier than the gambler thinks to lose several bets in a row and run out of betting money after doubling it all away. The bet ceiling rule for the Baccarat table also makes it more difficult even for players who have a big bankroll. Many other betting systems exist. Betting systems without validation are exhibitions of illusion of control.

in the long run. Such money management tricks do nothing to reduce the house advantage and are an example of the illusion of control.

Zhilang Dai

Dai's book on Baccarat is entitled *Baccarat Winning Formula* (2010). Again, the title of the book seems to hint both that the goal of Baccarat gambling is to win and that there is a formula to win. His books on gambling have been popular in the Chinese market. No erroneous perceptions have been found in Dai's analyses; rather, he summarized some typical erroneous perceptions in Chinese Baccarat gambling: (a) following the trend tactics (gambler's fallacy), (b) betting systems or money management tricks (illusion of control), and (c) following the winner (illusory correlation) (Dai 2010).

Bozhi Xu

The contents of the two reviewed books on Baccarat written by Xu are identical, and my analysis here refers to *Gambling Bible* (2007). Interestingly, the subtitle of the book is *Guaranteed Program to Become a Gambling God Quickly*, which appears to assure gamblers of the money-making potential of gambling. No erroneous perceptions have been found in Xu's analysis of Baccarat. However, he correctly encapsulated some erroneous perceptions of other Chinese Baccarat players, such as following the trend, betting system, and money management tricks. His books on gambling have been popular in Great China.

Discussion and Conclusions

All five authors whose texts I have reviewed in this paper claim or hint that the target of Baccarat gambling is for making money rather than for entertainment. According to these authors' own analyses of Baccarat and their observations about other Chinese Baccarat gamblers, cognitive distortions are pervasive among the vast majority of Chinese Baccarat gamblers:

1. They make betting decisions based on examining the historical outcomes in one shoe. Essentially, these attempts are to spot short regular patterns from random number sequences. Such following trend tactics are a manifestation of the gambler's fallacy. This is the most common cognitive distortion among the Chinese Baccarat gamblers.
2. They deploy a wide variety of betting systems or money management tricks in gambling, which are illusions of control.
3. They like to follow the betting of winning gamblers because they believe the good luck of the winner may last. This is an illusory correlation and also an exemplification of the availability of others' wins in Baccarat.
4. They tend to be overconfident (illusion of control) with their betting skills, which is not supported by the nature of Baccarat nor strategies they themselves have proposed.
5. Regretting mistakes made in past gambling and superstitious behaviors—such as not being touched by others on your shoulder during gambling—are also common.

As discussed by Ladouceur and Walker (1996), the common denominator of these erroneous perceptions is reliance on the fundamental principal of making links between independent events. The games are based on the principle of randomness, which stipulates

that the individual cannot predict the outcome of the game. The outcome of each game does not depend on the outcomes of the previous game(s). However, the gambler forgets or ignores this fundamental characteristic of a game such as Baccarat. Interestingly, the gamblers try to *control or predict the outcome of the game*. In doing so, they develop systems or strategies aimed at increasing their chances of winning. These systems mainly rely on analyzing or taking into account the outcomes of the previous games. Knowing that the previous games have no impact on the subsequent games, the gamblers become trapped in their erroneous perceptions by making constant and repeated links between objectively independent events.

As a pilot study to document the erroneous perceptions of Chinese Baccarat gamblers by reviewing Baccarat guidebooks written by experienced Chinese Baccarat players, the size of the sample is limited by such books available on the market. Nevertheless, these books revealed the authors' understandings about Baccarat and their in-depth observations of many other Chinese gamblers. To summarize, many cognitive distortions documented from Western slot machine gamblers also exist among Chinese Baccarat gamblers: superstitions, interpretative bias, illusory correlation, illusion of control, and the gambler's fallacy. Nevertheless, they may appear in particular ways due to the specific characteristics of Baccarat and cultural differences, such as following the trend and following the winner. Gambling counselors may improve the effectiveness of cognitive therapies with a better understanding on these game-specific distorted cognitions. These findings may also be incorporated into current and new prevention/education programs to make them more effective. In the future, it is worthwhile to empirically investigate the gambling behaviors and cognitive distortions of Chinese Baccarat players.

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